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Journal *of the* Association of American Medical Colleges

Volume 8

JANUARY, 1933

Number 1

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Published bimonthly, January, March, May, July, September and November, at 5 South Wabash Avenue, Chicago, Illinois, by the Association of American Medical Colleges. Subscription Price, \$3.00 per year. Single Copies, 75 cents.

Entered as second class matter January 17, 1930, at the Post Office at Chicago, Illinois, under the Act of March 3, 1879.

(Continuing the Bulletin of the Association of American Medical Colleges)

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JOURNAL
OF THE
Association of American Medical Colleges

Volume 8

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**Scholastic Aptitude Tests for Medical Students*
Report for 1932**

F. A. Moss

Secretary, Committee on Aptitude Test of Association of American
Medical Colleges

Our Committee is able this year to present a study of the predictive value of the aptitude test throughout the whole four years of medical school work. The members of our first experimental group of students who were able to complete the medical course successfully are now graduated, and we have had the opportunity to study their performance over four years as compared with their records on the aptitude tests administered at the time they were freshmen. In our report at this time we shall present the analysis of this group, as well as of a larger group who have completed three years of work, and of the first group tested under our program of testing applicants in the premedical colleges.

As in our previous reports we present the aptitude test as an additional criterion for selecting the best students for training in our medical schools. Studies of the validity of the various criteria which might be employed seem to indicate that the aptitude test is, in most instances, the best single criterion we have; but we do not contend that in it we have a panacea. No criterion which we have been able to discover or set up is perfect; we can arrive at the best selection only by the wisest use of all the criteria available which demonstrate a real relationship to ability to pursue successfully a medical course.

In the prediction of human behavior, there are so many variables that no one criterion is perfect. The more times a criterion has been applied, the better can its results be interpreted. Interpreters of the Literary Digest poll, for example, in 1928, predicted that both Massachusetts and Rhode Island would go for Hoover instead of Smith because he led in the straw ballots; but this year, although Hoover again led in the straw ballots, the same interpreters correctly predicted that

*Presented at the Forty-third Annual Meeting of the Association of American Medical Colleges, held in Philadelphia, Nov. 14-16, 1932.

The personnel of the Committee on the Aptitude Test for the year 1931-1932 was: Torald Solmann, Western Reserve University, chairman; F. A. Moss, George Washington University, secretary; Beverly Douglas, Vanderbilt University; Edw. A. Koch, University of Buffalo, and H. G. Weiskotten, Syracuse University.

Roosevelt would carry both Massachusetts and Rhode Island. They recognized that in these two states there were certain intangible forces operating which were not indicated in the straw ballot.

So it is with the aptitude tests. After each year's test, we discover certain points of weakness and try to remedy them. And just as the straw ballot serves, not as a perfect but as a very good indication of what the voting public will do, yet by intelligent study and careful interpretation the results can be increased in reliability; so the aptitude test, while in most cases a very useful criterion, is by no means a perfect one and should be interpreted in connection with the other factors which determine success in a medical school.

Success in medical school undoubtedly depends on a complex set of factors, the most important of which may be listed as:

1. Innate ability or aptitude, for which our test is a very usable indication.
2. Previous preparation, a fair index of which is given by premedical grades.
3. Energy: it occasionally happens that a student has good ability and a satisfactory preparation but fails because of lack of energy. A physical examination may be of assistance in such cases.
4. Social adaptability or ability to fit in with fellow students and not antagonize instructors. We have no reliable measure of this, but ratings by premedical instructors may be of service.

All of these four factors should be taken into consideration in selecting medical students. Efforts should be made to secure more reliable methods for measuring these factors.

Test of December 11, 1931

A large part of the work of the Committee on Aptitude Tests has consisted in carrying out the program of administering the aptitude tests to applicants in the premedical colleges. Excellent cooperation by both premedical colleges and medical schools has been given in carrying out the testing programs. December 11, 1931, a new form (Form 4) of the test was administered to premedical students applying for admission to medical schools this fall (1932). The fourth form of the test constructed for use with this group consisted of seven parts, as follows: (1) Comprehension and Retention; (2) Visual Memory; (3) Memory for Content; (4) Premedical Information; (5) Scientific Vocabulary; (6) Ability to Follow Directions; (7) Ability to Understand Printed Material.

March 15 a complete report on all students tested was sent to each medical school. The body of this report consisted of a list arranged by

states and by premedical schools within the states of all the students taking the test. For each student was recorded his score on each of the seven separate parts of the test, his total score, and his percentile rating. In our test reports, the percentile ratings have been used in order to give an indication of the relative ability of the applicants. The percentile rating indicates where the students fall in relation to the whole group taking the test.

Last year the test was administered to 9,173 students in 537 colleges. The total scores ranged from 11 to 265. The median total score was 156, one-half those taking the test falling above and one-half below the median. On total score, the highest quarter made above 185; the lowest quarter below 124.

Test to be Administered December 9, 1932

Within a little more than three weeks from the time this report is made, the fifth form of the medical aptitude test will be administered in the premedical schools and colleges to the students who will apply for entrance to the medical schools next fall (1933). Our procedure for carrying out the testing will be essentially the same as last year. There are a few considerations with respect to this year's program which may interest the members of the Association.

We are giving the test on approximately the same date as last year—the second Friday in December. We have had some difficulty in finding a date for the tests which is entirely satisfactory from all standpoints. We have had to avoid, as far as possible, conflicts with holiday periods and college examination periods. We have had to hold the test early enough to make it possible to supply the test results to the medical schools in time to be of maximum value in the selection of applicants, even in those schools that begin their selection early. And we have had to consider the possibility that a test made too early in the school year might prove a disadvantage to applicants who spend only two years in the premedical school.

Early last summer we made a questionnaire canvass of the medical schools to determine the best date for giving the test. Fifty-four per cent preferred testing in December, with test results available February 15; 37 per cent in February, with test results available April 1; and 9 per cent had no preference. It was largely on this basis that we left the testing time in December for another year. We also tried to change the content of the test to meet the chief objections to administering it during the first semester as compared with a date toward the end of the school year.

* Changes in the test form to be used next month include primarily:

1. There is the addition of one new test, a "logical reasoning test." It has been suggested several times that we include a test to measure reasoning ability. This test was designed to measure particularly this quality. In the preliminary trials that we have made of this type of material it seems to have considerable promise.

2. The "scientific vocabulary test" is in a different form. We have substituted a "matching" form of test for the "Same-Opposite" form of the previously used vocabulary tests. The possibilities of suitable items with the S-O form are limited—the new form broadens the field from which to select. The new form also has the advantage of lessening the number of items of the whole test that are of the alternate-choice type (a point on which we have received some criticism).

3. The "premedical information test" has been omitted. In suggesting an omission of this test we have taken the following into consideration: (1) The premedical work of the students is considered in their scholastic grades received in college. Since these grades will continue to constitute one of the criteria for admission to medical school, it seems less necessary to measure this aspect in the aptitude test. (2) The omission of a test of specific premedical information will obviate the criticism that the students are tested for information on material which they have not had. Last year we attempted to score the one hundred premedical information items in such a way as to consider only what each student had already covered at the time the test was taken. This involved a time consuming process of obtaining from the registrar of the college in which each student was registered, a record of what he had completed, as we found too many omissions and inaccuracies in the statements filled in by the students. (3) We have recently tried about 150 premedical information items and somewhat more than 100 of the new matching type vocabulary items on a class of students who have completed one year of medical school work. We checked each item of both the premedical information and the vocabulary for selective value in terms of its ability to separate good and poor medical students. In this study the vocabulary items showed a decidedly better selective value than did the premedical information items.

As was done last year, a carefully organized report on all the students taking the test will be sent to the admission officers of each medical school. It will give a complete distribution of grades and other general data about the test results, also a detailed report on each applicant, showing his total score and percentile rating on the test. We expect to have this year's report in better form than was last year's.

**Study of One Thousand Students Who Took the Test
Four Years Ago**

PREDICTION OF FOUR-YEAR MEDICAL SCHOOL GRADES BY THE APTITUDE TEST. We have now been able to follow through four years of medical school work approximately 1,000 students in 14 schools who took the aptitude test in the school year 1928-1929. The schools in which students were tested in this first year of our experimental study include: Baylor, Boston, Cincinnati, Creighton, Dartmouth, George

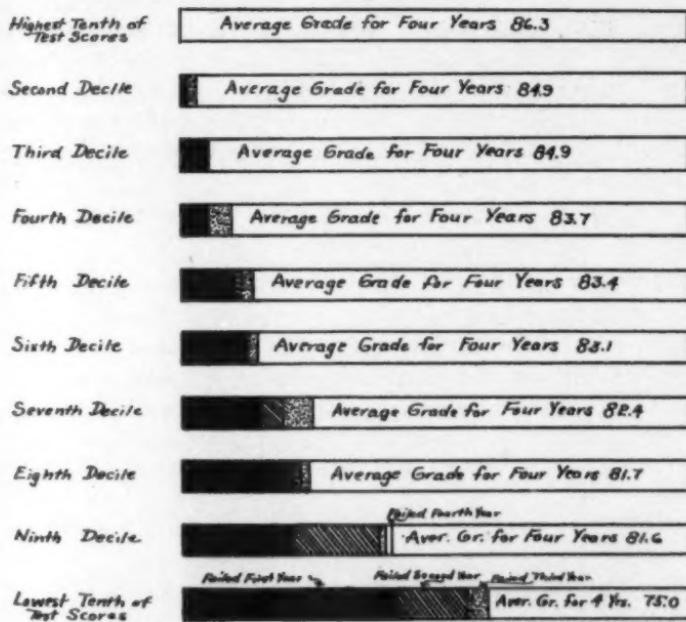


Fig. 1. Medical School Performance at Various Test Score Levels.
(1,000 students; Class June, 1932)

Washington, Hahnemann, Meharry, Minnesota, Syracuse, Temple, Tennessee, Western Reserve and Woman's Medical College.

Chart 1 shows how well the test predicted the success of these students over the four-year medical school course. The students were divided into ten equal groups on the basis of their scores on the aptitude test. Each bar shows the percentage of failures occurring in the four years and the average grades of the group. It is of interest to note that

in the highest tenth no man has failed in any of the four years of the medical school course, and the group shows an average grade for the four years of over 86 (an exceptionally high average). Eleven per cent of this group graduated with final medical school averages of 90 or higher. On the other hand, at the end of the medical course, 60 out of 100 failed in the lowest tenth, and the final average for this whole tenth is only 75.0, just barely passing. None show an average as high as 90, and the majority of those who graduated show low grades and failures in some courses during the four years.

For most of the groups of tenths of test scores on this chart, the average medical school grade is slightly higher than for the corresponding tenths as we showed them last year at the end of three years' work. This only signifies that medical school students receive higher grades as seniors than as lower classmen. As a matter of fact, we have found that, in general, each successive year raises the average of students in medical school slightly.

Based on the distribution of medical school work over the four-year course of these 1,000 students, we may say that:

If a student has a score as high as the upper tenth tested:

- (1) The chances are 100 per cent that he will graduate from the medical school,
- (2) And the chances are 3 to 1 that he will average 85 or over for the whole four years.

On the other hand, if he is as low as the lowest tenth tested:

- (1) The chances are 60 out of 100 that he will not be able to graduate because of failure to carry the work successfully,
- (2) And the chances are 9 to 1 that he will have an average below 85 if he does graduate.
- (3) Or 2 to 1 that he will have an average below 80.

COMPARATIVE STUDY OF FOUR COMMONLY USED CRITERIA. Our Committee has been interested from the beginning of our work in studying the predictive value of certain other criteria which are now generally used in the selection of medical students. As we have repeatedly stated, we do not desire to replace any criteria of proven value with the aptitude tests; but we urge the careful selection of a battery of criteria which will supplement one another. Let us now consider the relative efficiency of the various criteria and certain combined criteria as shown on one thousand students.

For all the 1,000 students in our four-year group (graduating class of June, 1932), we know the test scores, their premedical scholarship, their number of semester hours entrance credits, and their age at entrance. A comparison of these factors has been made with respect to their value as criteria in predicting failures occurring throughout the four years. Another factor often given consideration is the personal or interview rating. This we have omitted because of its unavailability, except in a few individual schools. We have presented in the past analyses of this criterion in individual schools with a demonstration that its value for predicting failures is relatively low.

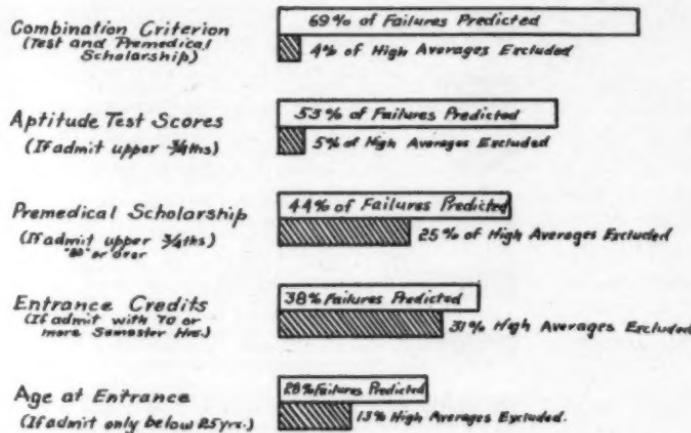


Fig. 2. Efficiency of Various Criteria for Selecting Medical Students.
(Standard in all: upper three-fourths)

Chart 2 shows the relative advantages of the five criteria indicated. The predictions of percentage of failures refer to percentages of the actual failures which occurred in this group throughout their four years. The percentage of good students excluded is indicated since it is obvious that any criterion that is used to eliminate failures must be one which excludes as few good students as possible. These figures cannot, of course, consider any possible good students eliminated by the standards now in use (as "passing" premedical grades or 60 hours of admission credits). Since students falling below these standards were not admitted, there was no chance to find out anything about them so far as medical school performance is concerned. It is quite possible, for example, that some who were refused admission because of low premedical

grades would have been able to carry the medical course successfully if admitted. We are not implying that standards in these criteria should be raised. The chart indicates too large a percentage of good students excluded for such a recommendation, and it also shows that our predictive efficiency can be increased by combining the criteria.

For the one of these criteria which we have been comparing with the aptitude test that is usually considered most valuable in differentiat-

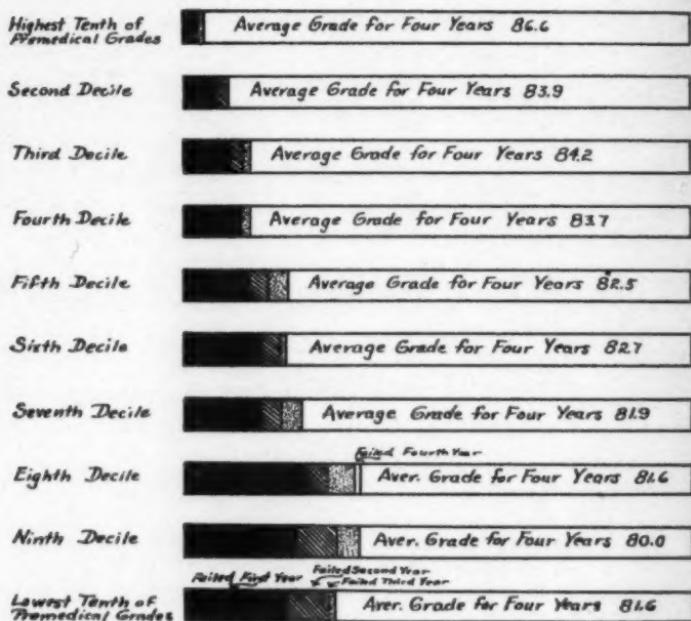


Fig. 3. Medical School Performance for Various Premedical Averages.
(1,000 seniors, 1931-1932)

ing applicants, we have also studied the four-year medical school averages according to tenths of students, as was done for the test scores in Chart 1. Chart 3 shows the distribution of four-year medical grades for different premedical averages. In this chart the students are divided into ten equal groups on the basis of their premedical averages. The first bar represents the highest tenth of students in their premedical work, the second bar the next to the highest tenth, and so on to the last bar which represents the lowest tenth in premedical grades. It can be seen

from this chart that there is a definitely positive relation between premedical grades and success in the four years of medical school work, there being a definite tendency for those with high premedical records to do better medical school work than those with low premedical records. However, this chart should be contrasted with Chart 1 in which the students are divided into tenths on the basis of test scores. The failures predicted by the lowest tenth of test scores constitute 60 per cent of the group; those predicted by the lowest tenth of premedical grades only 31 per cent, and this could be effected in fact only if we raised premedical scholarship requirements above what they are, and as we have already pointed out the number of good students excluded would make this a questionable procedure. It is also interesting to note that the eighth and ninth decile groups of premedical grades show as large a number of failures as does the lowest tenth.

A further analysis of the premedical grades as a criterion has been made with the purpose of comparing the predictive value of the various premedical requirements. For the 1,000 students followed through four years of work, we have studied the correlation between final averages in the medical school and each of the required premedical subjects, including general chemistry, organic chemistry, zoology, and physics, as well as the total premedical average. The averages of the correlations with four-year medical grades are:

General Chemistry	38
Zoology	37
Organic Chemistry	36
Physics	33
Average of premedical requirements.....	44

In individual schools, the correlations for separate subjects go as low as .10 and as high as .68; and for average of all premedical requirements they go as low as .18 and as high as .59. These variations are probably dependent to a large extent on differences in accuracy of grading in various subjects and in various schools.

The foregoing emphasizes certain values of the test with reference to its use in conjunction with premedical grades. These are considerations especially applicable to those medical schools that receive students from many premedical colleges. An examination of the following tables will make the value clear (Tables 1 and 2).

In Medical School I (University of Tennessee), for example, we found that there were 17 failures out of 98 students at the end of four

year's medical school work. This medical school is part of a large university whose undergraduate department trains premedical students.

TABLE 1. MEDICAL SCHOOL I: 98 STUDENTS
17 FAILURES AT END OF FOUR YEARS' WORK.

	Average Test Score	Average Premed. Grade	Percent of Failures	Number Students
Students from School "A" (own university)....	144.3	81.2	9%	34
Students from School "B".....	157.5	83.5	10%	19
Students from other Schools.....	123.4	81.6	27%	45

Some of the students of the medical school, in this instance 34 of the 98, were drawn from its own undergraduate premedical department. Nineteen of the remaining students of this medical class are drawn from another premedical school which we have designated as School "B". The remaining 45 are drawn from scattered premedical schools. In examining the source of the 17 failures we find a very interesting situation. Only 9 per cent of those from School "A" (the home premedical department) failed; 10 per cent of those from School "B" failed; while 27 per cent of those drawn from other schools failed.

We examined the premedical grades of the students from the different premedical groups. The average premedical grades for the three groups are quite comparable, and indeed the group showing 27 per cent of the failures has a slightly higher premedical average than those from School "A". It might also be stated that the majority of the 27 per cent of failures as individual cases had creditable premedical college records. Yet, we know that these three groups must differ in calibre in some way; or there is nothing to account for the difference in medical school performance.

An examination of the test score averages will, perhaps, suggest an answer to the problem. We note in this respect the wide difference between 123 and 144 or 157 as test averages for the groups. Average ability of those drawn from the third group is markedly below that of those from Schools "A" and "B", yet the premedical averages do not reveal it.

An examination of similar records in Medical School II (Boston University) are even more convincing. Note particularly those students from Premedical School "D"—with an average of 86 in medical school, a very creditable group, indeed. In looking for an explanation of their superior work, we notice their premedical records—an average of 82—no higher than for those from any other premedical school. But we find their test average is 190 as compared with 157, 160 and 165, respectively, for the other groups.

TABLE 2. MEDICAL SCHOOL II: 56 STUDENTS
5 FAILURES AT END OF FOUR YEARS' WORK.

	Average Test Score	Average Premedical Grade	Average Med. School Grade	Number of Failures
Students from School "C".....	157.5	84.3	83.7	1
Students from School "D".....	190.0	82.0	86.0	1
Students from School "E".....	165.0	83.2	83.5	1
Students from other Schools.....	160.0	82.0	83.5	2

The conclusion to which we are led in examining such results is that premedical grades do not satisfactorily differentiate students if

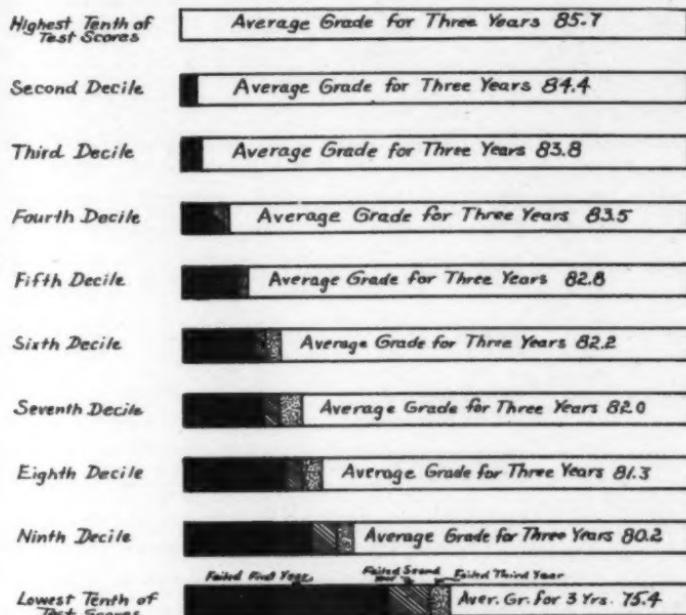


Fig. 4. Medical School Performance at Various Test Score Levels.
(5,000 Juniors, 1931-1932)

drawn from widely differing premedical schools. There are not comparable standards of grading premedical work; and 82 in one premedical college cannot be considered as representing the same as an 82 in another, either in ability of student or necessarily in scholastic qualification. But if test scores, based on the same tests given under the same conditions, at the same time in all the premedical colleges, be examined, the same students can be judged fairly well in ability on a comparable basis.

**Further Study of Aptitude Test in Predicting Grades for 5,000 Students
Who Took the Test as Freshmen Three Years Ago**

This part of the study consisted in the analysis of grades for approximately 5,000 students who took the test as freshmen during the school year of 1929-1930. The relation between grades (three year average) and test scores for the group is shown in Chart 4. The interpretation is similar to that for the four-year group just discussed.

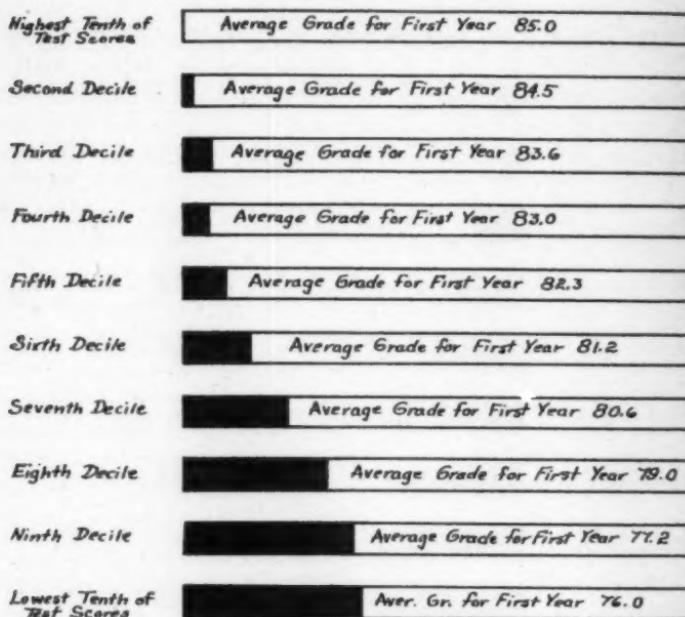


Fig. 5. Medical School Performance at Various Test Score Levels.
(Freshmen, 1931-1932)

Each bar shows the medical school grades during three years for one-tenth of the group. For example, in the highest tenth, there are no failures in any of the three years, and 9 per cent of this group have a three-year average of 90 or higher. Contrast this with the lowest tenth. We find 40 per cent failing the freshman year, 8 per cent more failing the sophomore year, and 4 per cent more failing the junior year. None have averages as high as 90; and 65 per cent have averages below 80.

This group is the same group studied a year ago through two years of work and presented at the New Orleans meeting. To the chart as now presented there have been added about 100 failures (2 per cent of the total 5,000) which occurred during the past year—the junior year of their work. Nine-tenths of these third year failures have occurred among the lower half of test scores.

Last Year's Freshman Groups Who Took the Test in Premedical Schools in February, 1931

Those students who took the aptitude test the first year that the Association undertook to apply it to applicants in the premedical colleges before admission to medical schools, have now completed their freshman year of medical work provided they were admitted the fall following their taking the test. We are now able to compare their scholastic records in the medical school with their test scores. Correlations between the test scores and the freshman medical averages are approximately the same as we have had in the experimental studies, the average correlation for all schools being .58.

We have analyzed in considerable detail the records of the low students and the high students on the test. In considering the analysis about to be presented, the proportion of high test scores and low test scores admitted has some significance. The following are the percentages of admissions for the various test score groups tested in 1931:

Highest tenth of test scores.....	62%
Highest quarter of test scores.....	57%
Middle half of test scores.....	51%
Lowest quarter of test scores.....	32%
Lowest tenth of test scores.....	22%

The remaining percentage in each test score group represents those students who were rejected for any reasons by the medical schools; and those students whose plans for entering medical school changed between the time the test was given (February) and the opening of school the following fall.

Chart 5 summarizes the freshman achievement for the students in various tenths of test scores. These figures are, of course, only representative of those who actually gained admission to medical colleges the fall after the test was taken. It should be remembered that only a relatively small proportion of those with the lowest scores gained admission. Had the same percentage of low scores been admitted as high scores the percentage of failures among low scores would undoubtedly be greater.

Conclusions

Our further study of methods of best selecting medical students with particular attention to the study of the use of the aptitude tests, seems to indicate the following:

1. No one method of selecting or criterion of predicting success in medical school is perfect; most of them are far from perfect.
2. The aptitude test scores give a somewhat better prediction of what the student can do in medical school than any other single criterion.
3. The best predictions of success or failure in the medical school that we have been able to arrive at are made by the use of a combination of criteria, giving particular attention to premedical scholarship and test scores. In certain cases, increased weight may need to be given to other criteria.
4. Our further study has indicated that in the aptitude tests we have a valuable additional criterion for predicting medical school performance; and our further experience with the tests has indicated the practicability of administering them to applicants before they enter the medical school.

In closing, I might suggest an analogy between our problem and that of diagnosing a disease. If we have one test that is absolutely diagnostic, such as a test for tubercle bacilli in diagnosing tuberculosis, and if this test is always available, then the one test is, perhaps, all that we need. Such a situation we might hope for in selecting medical students—one criterion that is absolutely diagnostic or prognostic as far as prediction of performance is concerned—but we have not yet reached such a stage in our problem, and there may be some question as to whether this can ever be attained. But if we are in the stage when no test method is absolutely diagnostic, we shall want to use all the indications we have in arriving at our conclusion, whether it be in diagnosing a disease or in predicting a medical student's performance. If we had to depend in detecting tuberculosis on the use of the stethoscope, percussion, the temperature of the patient, and the roentgen ray, we should want to consider all of them. In the frankly advanced case, one method might suffice to make us certain of our diagnosis, but not so in the doubtful case. Similarly, in our use of diagnostic methods in predicting our medical school performances—the poorest risks, the "frank" cases of failure, may be recognized with our old methods; the more questionable cases are best considered in the light of all the tests and criteria now available.

Discussion

DR. TORALD SOLLMANN (Western Reserve University, Cleveland): When Dr. Moss first presented this test to the Association some four years ago, I was quite skeptical about it. I did not have a very high opinion of the general intelligence test and I was afraid that this might be something of the same kind. On looking at it closer, however, I could see that this test was different in that it took into account the task to be accomplished, the aptitude for a particular thing and not intelligence in general, and Professor Robinson, who presented the paper for Dr. Moss at that time and who has worked a good deal as a psychologist in these tests, was very much convinced that it was worth while, and I was sufficiently interested so that we made the experiment in our school and we examined the results by different methods than those Dr. Moss had used. We were much impressed by the correlation that existed according to our method as well as that of Dr. Moss, so that I was glad to take the chairmanship of the Committee which had the whole matter in charge, the actual work being done by Dr. Moss.

I believe that anyone who looks at the uniformity of the results of these charts, year by year, collectively and by individual schools, can scarcely help but be convinced that they do show a very striking correlation between achievement in medical schools and the aptitude test grades. These are the best single criterion that we have of scholarship, and for scholarship they might suffice alone, as he pointed out, though the combination with college grades is still better than any one criterion, so that the test supplies us with very useful information, the best information we have on the subject of scholarship.

Of course, we all know that there are other things that the doctor requires besides aptitude for study or scholarship, but unless a student has the aptitude for study, he will never get the chance to apply this peculiar quality that he might otherwise possess. The first thing that we must be sure of is that he may get through his medical studies, and that is what the aptitude test assures better than anything else.

When we have these data, then it becomes the duty of the admission committee of each school to weigh them with the other factors. As has often been said, there is no use graduating the most brilliant criminal into a physician because he will not make a good physician, and that is the sort of thing the admission committee must also take into account and give weight. When all the factors point in one direction, the task of weighing is very easy, but when they conflict, it is not an easy noe.

That this information is actually being used with a good deal of success by the schools, is indicated by the figures that Dr. Moss did not read but which I happen to have, the relation of the test score to the acceptance by the school. It was found that of those in the upper half of the test last year, one-half were accepted. Of those in the lower quarter, one-third were accepted, and in the lower tenth, one-fifth were accepted. That is still a large amount of low score acceptances, but they may have been entirely justified because they were probably cases of discrepancy which you find wherever human factors enter and which, again, the individual judgment of the committee must try to eliminate.

The test shows that in the upper tenth we are certainly successful, but

when we get below that, there are individual cases in which mistakes are made and even the aptitude-scholarship combination would eliminate 4 per cent of the "good" men, so one must exercise judgment; we all, I think, do that, and the low grading men were accepted, no doubt, because there seemed to be extenuating circumstances. We may assume that those selected in the lower tenth were the best men of the lower tenth group, if we were at all efficient in our selection of that lower tenth; but the results show that of this hand-picked lower tenth more than one-half failed, and, therefore, that they should never have started. In one-half of these low test cases our subjective prognosis was wrong, which is a rather high percentage of mistakes.

Should the test be required by all the schools? At the present time, any school has the right not to require the test and I think it is well that it should retain that right, but should it exercise it? It seems to me that the school which does not require the test hinders others from effectively using it, without helping itself. It hinders others because it confuses the student and he feels that, perhaps, he can get in somewhere without taking the test and if he is not accepted there, it leaves him in a very bad position, and the school which has encouraged him not to take the test shares the responsibility for the difficulty in which he finds himself. The school does not help itself by not requiring the test for if it feels that it has reason to accept the student notwithstanding the low score, having seen the low score, it is perfectly at liberty to accept him, and should do so. If we feel that the test is mistaken in the case of any particular student, we set it aside and take something else, but we can have profit and nothing but profit by having the facts before us before we make that decision. The test can be given perfectly well without being universally required, but I do not believe that it should be handled in that way.

As to the finances, the test has been given without any serious financial tax on the students. Even in these days a one dollar charge for a test is not going to be a hardship on a student. When it is given at that price, the student does not pay the full cost. A part of it is borne by the schools which give the test, in that they make no charge for administering it. A charge for this purpose would not amount to much for an individual school but it would amount to a great deal in the aggregate if it were paid adequately. The second reason why the student has not paid the real cost is that the director of the test, who has given a great deal of time to it, has not been paid anything for his services. That, I think, was excusable while the test was in the experimental stage, but I think the time has come when it should be remedied. Even with that, however, there would still be a balance, which can be used to advantage and should be used on the test itself, in studies to make it more efficient than it is now. Dr. Moss has explained that in the test for the next year we will introduce certain changes, and changes have been introduced every year, and the effects of these changes have to be evaluated statistically; a good deal can be done, as he explained, with the different premedical studies, throwing light on which correlate best and, perhaps, suggesting changes that might be desirable in these; so that there is a great deal of opportunity for study in these tests which will improve not only the tests themselves but which may improve premedical education in general, and I think that it is to this that any surplus should primarily be devoted.

In these times of emergency it may also be advisable to subsidize other educational studies on the part of the Association, although ordinarily I would say the income should be put back into the test in fairness to the people who are paying. It should not be considered as a source of profit but should simply be used up in improving the service that is given.

I want to compliment Dr. Moss on the success of his studies, and on the correlation which is the best proof of their working. It is a pragmatic matter. If it does not work, it is not worth while. If it does work, it is worth while, and through the continued study that he is giving it, it evidently is keeping its place, and we hope that it will become even more successful. I feel that the Association owes a great deal to Dr. Moss for the work that he has done and the energy and time that he has put into it without stint.

DR. S. I. KORNHAUSER (University of Louisville, Louisville): We have had the most excellent cooperation from Dr. Moss. Whenever we have requested that additional examinations be sent in the fall to test the students who have not had the test, we have received them and had them graded, and had a marvelous cooperation from him.

I have followed each student for three years. We have had sixty-five students in each quarter of the class during the past three years. Of those in the upper quarter of the aptitude test, we have had only two fail completely. In the lowest quarter, out of sixty-five students, thirty-two failed. In the second and third quarters three and four, respectively, failed completely.

In the lowest quarter, sixteen passed all of their work so far. Of those, five were really good students and so we have had five good students out of sixty-five in the lowest quarter. It is interesting to study these five students and see why they have made good records in medical school. They are young men of excellent character who have not had proper training, probably, in their early years, men who have come from small schools, sometimes unaccredited, but they have native ability and the character to do the work when placed in an environment in which they are pushed. When they stand up in the first year, they will stand up in the second and third years just as well. We find that a man in the lowest quarter who does the first year's work well, generally succeeds in the other years.

Another interesting group is the upper quarter in which we have had some failures. Why did they fail? Sometimes they are men from excellent colleges, with a lot of premedical work, but when put on their own and they are working hard, they break. It is both lack of native ability and lack of character, the power and the ability and the drive to do the thing that is put before them which causes the failure.

I think the test has worked out splendidly in our own school. Of course, we would have eliminated a few good students if we had not taken any in the lowest quarter but we would also have saved a lot of grief among the thirty-two who failed.

DR. W. A. BLOEDORN (George Washington University, Washington, D. C.):

Dr. Earl B. McKinley, the dean of our medical school, has asked me to read his discussion as he is not present. We would like to present to the members of this Association the following statement regarding the use of the

aptitude test at the School of Medicine of the George Washington University. This statement was contained, in part, several months ago in a communication from President Marvin of the University addressed to Dr. Wilson as President of this Association. Since this work first originated in our institution we feel that we should offer at this time an analysis of the use of the test and our own conclusions regarding it. Our statement follows:

Analysis of test results on present senior class entering as freshmen in 1928: This class took Form I of the Medical Aptitude Test during the school year of 1928-1929, as a part of the first year of experimentation with the test in the medical schools. They formed a part of the first experimental group used for studying the relationship between the test scores and performance in the medical school.

Their test scores ranged from 90 to 232. At the present time, it is possible to study the relationship between their performance on the test and their performance through three years of medical school work. It is of considerable interest to notice the records of the low men and of the high men on the test. The ten lowest scores on the test were made by the following students: Croft, Elias, Montani, Robberson, Rodenbaugh, Sampson, Schnauffer, Shaffer, Charles M., Shaw and Shoemaker. Only one of these students is still in medical school. This one is Charles M. Shaffer, whose record is not particularly good. You will note that four of his five grades in the freshman year were below 80. His second year record also shows four grades out of seven below 80. His record the third year might be called quite satisfactory. Two of these lowest ten men, Elias and Robberson, completed the first year's work in the medical school, but with a failing average. One of the men, Croft, completed the first year with a passing average, but was dropped for poor scholarship at the end of the second year. The remaining six men did not even complete the first year's work. In other words, of the ten men lowest on the test, only one now remains in medical school, and his total record is considerably below that of the average medical student.

There are fifteen other students in this group who took the test who have had very poor records or who have dropped out because of poor scholarship. These include the following: Bellafiori, Biondo, Boot, Bressler, Caldron, Enyart, Fowler, Heilman, Mangold, McLean, Mitchell, Arthur, Passalaqua, Shaffer, Lester, Weeks and Wooten. If you will check these on the list of test scores, you will find that with four exceptions they fall in the lower half of test scores, many of them falling very close to the lowest ten mentioned above. The four whose test scores come up to average are just barely average. They include: Bressler, Caldron, McLean and Arthur Mitchell.

In examining the records for the students high on the Aptitude Test score, we find the following to be true. Of the highest ten on the test, no student has shown an average in any one of the three years below 80. The lowest three-year average in this highest ten is 83, and with the exception of this one, all have three-year averages of 85 or higher. The ten men who made the highest test scores are as follows: Amster, Blank, Hoffman, Kroll, Lafsky, Richtmeyer, Schiffer, Steinman, Stubbs and Weinstein. With one exception, this group includes the highest scholastic averages in the class. The only other student with an average as high as the average of these ten men is Fleck. Although his test

score does not fall in the highest ten, it is very high, being within nine points of this group. Weinstein has the highest average in the class; Fleck, Kroll, Lafsky and Stubbs have records next below Weinstein. (At the end of the senior year Fleck stood highest.)

Analysis of test results on present sophomore class entering 1930-1931: Similar results are shown by the analysis of one year of medical school work on the present sophomore class who took the test last February. The ten lowest test scores in this group were made by: Babyak, Friend, King, Knott, Larson, Rivera, Radice, Sanger, Tiley and Trozze. Of these students, Babyak failed in three subjects the first year, made 79 in one and 76 in the other and was dropped at the end of the first year. Friend was also dropped at the end of the freshman year, having failed in three subjects. King shows a creditable average at the end of the first year. It might be stated that his case represents that of a foreign student with language difficulty. Test results on a verbal test are never indicative of the true ability of foreign students, and are to be interpreted in the light of this fact. Knott shows failure in one subject the first year and 75 in another, and was required to take make-up examinations in two subjects. Larson and Radice were very poor students and did not complete the first year's work. Rivera made below 80 in every subject the first year and is no longer in school. Sanger failed in one subject the first year, made below 80 in two subjects and was required to take one make-up examination. Tiley failed in one subject, made 75 in one subject the first year and was required to take two make-up examinations. Trozze failed in one subject, made below 80 in two subjects and was required to take two make-up examinations. Our records on these students are not complete beyond the records of last June.

There are a few other students in this class whose test records were fairly good, but who did not succeed in the first year's work. You will note, for example, the cases of Hoch and Pitts. It seems to be that in both these cases there were interfering factors which made their records lower than their ability would indicate. Pitts, for example, attempted to do medical school work at the same time that he was doing practically full time outside work, and was not of an ability to be equal to the job. While the test results will give a very good indication of the student's level of ability, it, of course, cannot take account of extraneous factors which may interfere with the student's use of his ability, and it is for this reason that we should never recommend the use of the test results alone in considering the case of medical students.

In this class, also, there is a fairly good agreement between high test scores and high average for the first year. The highest man on the test, Goldberg, has an average of 89. Peckham and Robbins also have very high averages and show very high test scores.

It should be mentioned that the aptitude test was given to this class (1930-1931), according to information furnished me by Dr. Moss in a letter dated January 5, 1932, on February 13, 1931. This means that the 1930-1931 class received the aptitude test after four and one-half months of formal instruction in the School of Medicine or what would correspond to approximately the end of the first semester. Regardless of whether any grades of these students were available at this time, it is manifestly apparent that on account of the content

of material in these tests the examinations should have been given prior to their entrance into medical school. Because of this, we (the administrative officers of the School of Medicine) do not feel that the integrity of interpretation of such data should be relied on.

The report we have just included makes a qualification that the test "cannot take account of extraneous factors which may interfere with the student's use of his ability." Dr. Moss made a report before the Association of American Medical Colleges in New Orleans in December, 1931. Following that report and an informal discussion of it on the part of the attitude of the George Washington University Medical School by Assistant Dean W. A. Bloedorn, the whole matter was brought up for discussion by the Medical School. In order that we might have the statistical tables verified and interpreted in an impartial way, the president of the university asked the professor of statistics in the George Washington University to go over the reports of Dr. Moss, make a statistical investigation of the premedical school average grades, and the medical aptitude test scores for the class entering our University in September, 1928. In this study, Professor Weida used the Pearsonian coefficient of correlation which is a measure of the degree of linear relationship that exists between the measured quantities. The results are as follows:

"The correlation between the Premedical School average grades and the Medical School average grades is 0.52.

"The correlation between the Medical Aptitude Test scores and the Medical School average grades is 0.61.

"The correlation between the Premedical School average grades and the Medical Aptitude Test Scores is 0.51.

"With the correlation coefficient of 0.52, the "Mean Square Error of Estimate" is 4.5 while the dispersion of the Medical School average grades is 5.3. The forecasting efficiency here is about 13 per cent. This means that the Premedical average grades are practically useless for the purpose of forecasting Medical School average grades.

"With a correlation coefficient of 0.51, the "Mean Square Error of Estimate" is 2.1 while the dispersion of the Premedical School average grades is 2.5. The forecasting efficiency here is also about 13 per cent. This means that the Medical Aptitude Test Scores are practically useless for the purpose of forecasting Premedical School average grades, and conversely. Another reasonable interpretation seems to be that the two things here compared are lacking of dependence and really measure different things.

"With a correlation coefficient of 0.61, the "Mean Square Error of Estimate" is 4.1 while the dispersion of the Medical School average grades is 5.3. The forecasting efficiency here is about 20 per cent. This means that the Medical Aptitude Test Scores show a real relationship to the Medical School average grades, but the Medical Aptitude Test Scores are of very limited usefulness for the purpose of forecasting Medical School average grades.

"The above suggested the combining of the Medical Aptitude Test Scores and the Premedical School average grades. We therefore computed the multiplied correlation coefficient which measures the degree of relationship (linear) of the Medical School average grades on the Medical Aptitudes Test Scores and the Premedical School average grades. This multiple correlation coefficient was found to be 0.66.

"With the correlation coefficient of 0.66, the "Mean Square Error of Estimate" is 3.9 while the dispersion of the Medical School average grades is 5.3. The forecasting efficiency here is about 25 per cent. This means that the Medical Aptitude Test Scores and the Premedical School average grades together show a real relationship to the Medical School average grades but even in this case the

criterion is of very limited usefulness for the purpose of forecasting Medical School average grades.

"It is fair and correct to say that from our data, it appears that the Medical Aptitude Test Scores are a slightly better criterion for selecting our medical students than the Premedical School average grades. Again, the Medical Aptitude Test scores and the Premedical School average grades taken together are a somewhat better criterion for selecting our medical students than either the Premedical School average grades or the Medical Aptitude Test Scores used alone. However, as has been indicated, neither of the criteria appears to have much utility for forecasting purposes.

"Any criterion that is used or known thus far for the purpose of selecting students is in my opinion quite arbitrary and should be applied with great caution. I feel that as yet our so-called intelligence tests are in a highly experimental stage. As I see it, such tests really tell whether the student who takes it knows or does not know the answer to the question asked. Until we really know what intelligence is or have a definition of intelligence, it is hard to see how the unknown can be tested or estimated. It is, however, conceivable that some day a real valuable prognostic test may be assembled, but as yet none seems to exist. The difficulty, as I see it, is that the forecasting problem in which we are interested is a function of many variables many of which are unknown.

"Some mention has also been made that the students are given an interview before a committee which after the interview gives the student a rating based on the numbers 1, 2, 3, 4 or 5. The results of this interview rating which in one case of students I have seen is also unreliable as most of the students have a rating from 2-4. In such interviews, bias is sure to enter. I believe that the interviews might prove valuable if the student would appear before one individual at a time for an interview and then the ratings were pooled.

"I do feel that if we would use—but with caution and common sense—the combined Premedical School Average Grades and Medical Aptitude Test Scores criterion; the individual interview—say before five different individuals; financial ability; home history and parental history; personality and individuality; personal appearance and bearing; as criteria for selection; we could formulate a fairly good basis with which to select the best from the applicants to our Medical School."

Following this report, the president of the university had a conference with Professor Moss and another with the Dean of the School of Medicine. Out of those discussions grew the question as to whether the test prepared by Professor Moss would be any more valuable than any one of the general intelligence tests. In order to answer this question, the president again asked Professor Weida to make a study of the correlation between certain tests which we had already given to freshmen students here that could easily be compared with the Moss tests and Professor Weida finds the following measures of linear relationships:

RELATED QUANTITIES	CORRELATION COEFFICIENT
3-year medical average and army-alpha test.....	0.41
3-year medical average and medical aptitude test.....	0.60
Army-alpha and medical aptitude test.....	0.52
3-year medical average and medical aptitude test.....	0.64
3-year medical average and premedical science average.....	0.48
3-year medical average and premedical chemistry.....	0.50
3-year medical average and premedical physics.....	0.36
3-year medical average and premedical zoology.....	0.42
3-year medical average and premedical english.....	0.40
3-year medical average on medical aptitude and premedical average.....	0.67
3-year medical average and premedical average.....	0.54
3-year medical average on medical aptitude and premedical average (Const.)	0.49

3-year medical average and achievement part of medical aptitude test..... 0.42
 3-year medical average and intelligence part of medical aptitude test..... 0.47

"To interpret the above results I present the following table:

COEFFICIENT OF CORRELATION	PRACTICAL INTERPRETATION
Below 0.50	Practically useless for the purpose of forecasting—at most only 13 per cent effective.
From 0.50 to 0.60.....	Evidence of some relationship; of very limited utility for prognostic purposes—only from 13 per cent to 20 per cent effective.
From 0.60 to 0.70.....	Evidence of a real relationship; of limited utility for prognostic purposes—only from 20 per cent to 29 per cent effective.

"To these students as premedical students, the following intelligence tests were given to the group that were premedical students in our University. There was no record obtainable as to intelligence test record for the group that did their premedical work elsewhere. One group consisting of 22 students was given the "Army Group Examination Alpha Test" form 9. Another group consisting of 9 students was given the so-called "Mental Alertness Test". Still another group consisting of 5 students was given the "O'Rouke" test. There was no overlapping of groups. Hence, to the 36 of this class that took their premedical work with us tests other than the Medical Aptitude test were given. There appeared no way of logically taking these three groups and combining them in a single group so as to have a larger group for study. Hence, for intelligence test comparison, I took the largest of the three groups—the group taking the Army Alpha test. Notice, for these 22 students, I found the first three correlation coefficients given above. From so small a group one can not expect a result that is at all reliable. For the remaining results given above, it was possible to use 51 cases and even this number is rather small for the expectation of really reliable results."

The following deductions were drawn from the above report:

(1) "In no case does the correlation coefficient indicate utility for prognostic purposes.

(2) The Medical Aptitude Test from our sample appears some better as a criterion than any of the other tests or grades, but is only of limited if any utility.

(3) The premedical average grades and the Medical Aptitude Test together appear the best of the grade criteris; but are only of limited if of any utility."

After consideration of the entire problem and the results of our own experience with the aptitude test we have decided to discontinue its use at the George Washington University School of Medicine.

REV. ALPHONSE M. SCHWITALLA, S. J. (St. Louis University, St. Louis): I have been very much interested in the aptitude test ever since it was first mentioned in this Association. I think it has done something very serviceable and very valuable for all of us who have been on admission committees in schools of medicine. It gives in general terms some criterion of what a boy can do. This very searching analysis made by this statistician has again thrown considerable light on the value of that test, but I should like to call attention to the method by which some of these conclusions are calculated. If you expect of this test that it will tell you that if a boy makes an average of 130 in the test, he will necessarily make an average of 86 in pathology or in anatomy, you are expecting of it much more than it can possibly give you, and these correlation coefficients are calculated, I assume, with just particularly that problem in mind.

If, on the other hand, you take a wider criterion and say that a boy who makes an aptitude score of, let us say 130, which places him in a certain tenth and expect to use that one-tenth as a criterion that the boy will fail or not fail, you have a much higher coefficient of correlation. In other words, the finer you use the standards between which you wish to correlate, the less reliable this test will be in terms of any human performance test. If you use a wider criterion, you will get a higher degree or a higher coefficient of correlation.

DR. FRANCIS G. BLAKE (Yale University, New Haven, Conn.): In view of the statistical analysis it would seem to me that possibly, if it is assumed for the moment that the aptitude test is a satisfactory measure, the results merely show that our methods of measuring medical school performance are not sound.

DR. HENRY S. HOUGHTON (State University of Iowa, Iowa City): There are certain inferences which we have made from this test, in use over several years, which I should like to present in view of the discordant opinions that have been expressed here.

In the first place, this and other tests are criteria of student success and not of prospective professional success. I mention that because many of my friends have a feeling that the students believe we are using it as an index of future professional performance. As a matter of fact, it has nothing to do with it. Into professional success enter all sorts of imponderables not intimately concerned with the student's success. We consign him to God, at the end of four years, with the hope that his qualities of character and personality will enable him to make a success.

We have found a certain significance—a group significance—in these various criteria, particularly with respect to the high and the low sections; in between is about an 80 per cent range in which we feel that we can tell nothing in particular from the results of the tests. They are, I think, more significant if we use multiple indices.

We have tried to use four: First, the rank in the high school class from which the student comes in. That is one index, perhaps not very important, and yet I feel that it has some meaning.

We use, then, the qualifying examination of the university given to all freshmen, which is a general intelligence test based on the secondary educational system of the state, and that, again, is significant in its high and low ranges. To that we add a record of the premedical liberal arts performance; and, finally, the Moss test.

When we take four of those indices and find a student who is in the upper levels on all four, I think we can say this much: that he is likely, other things being equal, to be a good student.

I have been particularly interested in the student who has a good index, and who, other things being equal, may be expected to be a good student, but who is not. Something has happened. I have been studying those men with a good deal of care, as well as the lower stand students who, for some reason or other, turn out to be gilt-edged prospects.

The intangibles that enter into situations of that kind are extremely interesting to me. A man comes in with every prospect, from his measurements, that he is going to be a high class man, and one is dismayed to see that he is

going to be down and out by the end of his first year. That may be due to various factors; and, I think, we all have to bear them in mind. It is a place where it seems to me the administration of a medical college has a good deal to do with the conservation of prospectively valuable professional material.

Some of these things may go wrong because of certain acquired characters as well as inherited character. A boy may not have learned cooperation or perseverance. He may lack integrity. He may lack certain of those qualities of mind and of character which are not, in essence, measurable.

Secondly, he may be subject to all sorts of environmental changes which nullify the good qualities that he really possesses. I met a student who was what I would call a high prospect, but who was failing, and on investigation I found that this boy was trying to earn his way through his medical course by getting up every morning at 3 o'clock and working in a bakery. The consequence was that he was not getting enough sleep. He was not able to cover his work adequately and was breaking not only in health but also in morale.

All sorts of environmental factors have to be faced. A boy may have come away from home for the first time to a new and alien environment that may break him. He may get in with the wrong crowd. He may live in the wrong place. He may fall in love with a nice girl. All sorts of things may occur which will influence him. So, in the last analysis we have felt that the indices and criteria of measurable qualities are all good, but their limitations are great. They deal with masses and not with individuals; they operate in a limited sphere in which we cannot find or expect to find out details about any given individual and they are effective by and large only in the higher and lower ranges as a predictive measure.

DR. E. P. LYON (University of Minnesota, Minneapolis): I do not agree at all with the decision of George Washington University. I call attention to the practical problem which faces any admissions committee. They have before them applications of two hundred, three hundred, or four hundred students. They can take, perhaps, one hundred. If they have no basis at all for prognosticating, the proper thing would be to throw all the names into a hat and draw out one hundred. If they have diagnostic methods of any value at all, they should use those means to the best of their ability. The aptitude test has shown itself to be the best single diagnostic method available at the present time. If prognostic criteria are good to the extent of even 25 per cent in any combination, we ought to use them. In fact, we must use them.

I would refer you who are physicians to this very problem as you must meet it in practice. I suppose you are willing to admit that your diagnostic ability is probably in few cases absolutely perfect. Now, suppose you face this very problem and that you can only make your diagnosis perfect for 25 per cent of certain conditions, would you not feel that you had to make the best diagnosis possible—apply all possible criteria in your practical work as physicians? Otherwise your work would be all in the dark and you might as well throw the names of diseases into a hat and pull out one and begin to treat your patient on that basis.

DR. O. B. HUNTER (George Washington University, Washington, D. C.): When Dr. Moss first started the aptitude test, I was the assistant dean at

George Washington University Medical School and chairman of the admissions committee. I was very happy to be able to help him in some of the preliminary features and we got the cooperation of a number of our students in taking examinations of this character after they entered the School of Medicine. The results of these preliminary tests were very carefully studied by Dean Borden and myself, and we came to the conclusion that while the test was not a perfect criterion, it gives a very helpful indication of what one may expect a student to do in his scholastic work. As indicated in the report of Dr. Bloedorn, we found it to have the highest predictive value of any single criterion.

Dean Borden, you may remember, was enthusiastic about the way this test worked out in our Medical School, and, if I may take the liberty, I will quote what he said before this Association three years ago:

"Regarding our own school, we worked entirely independently from Dr. Moss; in other words, our faculty knew nothing of his tests, when they were made, or what the ratings were. In the class tested, while we made all our selections by competition, as we had at least three or four applicants to every one that we accepted, and though we scanned all premedical credentials with great care, and tried to take only applicants having the best, of the twelve below Dr. Moss' point of efficiency whom we accepted on this competitive basis, nine failed, two failed only moderately and were allowed to repeat, and one passed with a great deal of difficulty."

"This matter comes down to an economic proposition. It is an economy to the students and to the school, if every admitted student can go through the whole course. If he cannot do so, from the standpoint of the student who fails, he has wasted time and money; and from the school's standpoint, it has wasted teaching time and equipment money."

I agreed with Dean Borden's statement three years ago; I agree with it more fully today.

DR. EDWARD A. THORPE, JR. (University of Pennsylvania, Philadelphia): We have found that the aptitude test is of some value. I agree with Dean Lyon in that if there is any criterion which will help us in the selection of medical students, we should use it. Not only does it have positive value to a certain extent; it also has negative value to a certain extent in that it helps the poor, beset dean with an additional reason for rejecting the student, and he has to tell the politicians something.

We have used the test now only for the past three years, and have found it of value. Our all-time mortality, as we call it here, at Pennsylvania, is about 8 per cent. I believe that that, while it may not be an irreducible minimum, is very close to it because it is exactly the figure of the physiological loss of weight of newborn babies in the nursery, no matter what you do for them.

In regard to the aptitude test, we cannot hope that it will be perfect because it is not heaven-sent. The only aptitude test ever devised that was perfect was so sent, and that was the one used by Gideon for the selection of his army.

DR. SOLLMAN: Dr. Lyon has well expressed the commonsense view of the matter, that if the test is any per cent efficient, we should use it. Aside from that, however, I should like, in order to clear up confusion which may have

arisen, to discuss the report that was offered to us from Washington University in regard to the apparent contradictions.

The point that struck me was the agreement of this report with the reports Dr. Moss has made here. The percentage figures and the correlation coefficient are exactly the same, both for the universe of students and for those of George Washington University Medical School. This is, therefore, a complete confirmation. The report concludes: "Of all the single criteria, this is the best." Just as Dr. Moss has reported; that the combination of this test and the premedical grades is somewhat better—again what Dr. Moss reported; that by taking this and the interview and appraising personality, and so forth, we will make the best selection of students we can make, taking in other things, and that, of course, is what the Committee has reported.

I am somewhat surprised that after all that, the report concludes that it is not worth while giving the test. That is apparently based on the efficiency coefficient. The correlation coefficient is a relatively simple thing. When we come to an "efficiency coefficient," however, we must be sure that we are applying the right kind of formula. When we see on the chart that none of the students in the first decile fail, we know in the first decile the test is not 10 per cent efficient but 100 per cent efficient; in the lowest decile it is also highly efficient; the whole picture which the chart presents is a picture of efficiency all the way through. When the Washington mathematician concludes that this has no value whatsoever, and that it is not worth doing; that it is of no value to know that in this upper decile group, all are going to pass, that is a paradoxical contradiction which must make one question the "criteria of efficiency" that were used. I suggest that there is the nut of the controversy. This criterion, whatever it may be, is not self-evident to the contrary. I have asked a statistician what was meant in deducting that efficiency from the data and he replied that he did not know. It is not a current method of working these things out; the correlation coefficient was. I suspect that this efficiency quotient judges the exact position that a man will occupy. If you predict the fiftieth place and he makes it, it is efficient, but if he makes the fifty-first or forty-ninth place, then it is inefficient. This would give an "efficiency" figure that would mean nothing at all to us as medical admission officers. It is indifferent to us whether the fiftieth man occupies the fortieth or the sixtieth position. A 20 per cent range does not make any serious difference. What we want to know is whether he is high up, low down, or in the middle, and in regard to that the efficiency of the aptitude test is nearer to 100 per cent correct than to 13 per cent or even 20 or 25 per cent correct.

DR. F. A. MOSS (Secretary, Committee on Aptitude Tests): The adverse report from the medical school at George Washington University has been so thoroughly discussed that there is no necessity of my wasting the time of this Association by going into further details.

There is one point, however, that needs to be made plain. The criticism was made in the McKinley report that the tests four years ago were given in January and were therefore unreliable, the implication being that some one at George Washington first found out how the students were getting along in medical school and doctored the test results to produce the desired predictive

value. The absurdity of such reasoning is readily seen when it is remembered that in that year the tests given in other medical schools worked equally well or better than those given at George Washington. This insinuation in the George Washington report is further discredited by the fact that the tests when given in premedical schools are giving as high, and in some instances higher, correlations than those secured four years ago at George Washington.

In closing I will say a word about the so-called "efficiency quotient" mentioned in the George Washington report. How they determined this efficiency quotient was not made clear. When we speak of the efficiency of machines we mean the proportion of energy put into the machine that can be turned out in useful work. Such a formula for measuring efficiency is universally recognized by physicists. When this formula is applied to most steam engines, we find that their efficiency is below 10 per cent, and in no case is it above 20 per cent. The efficiency of most gasoline engines is between 14 and 28 per cent. Inasmuch as those who prepared the McKinley report admit that the Aptitude Test is the best criterion now available, does it not seem strange that they would recommend that it be discarded because its "forecasting efficiency" is only from 20 to 25 per cent. With such reasoning they would logically urge that all steam engines and automobiles be discarded until the mechanical engineers can build machines of more than 25 per cent efficiency.

Report of the Committee on Nursing Education

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Summary

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In accordance with the instructions given at the 1931 meeting of the Association, your Committee has given further consideration to the question of the relation of this Association to nursing education. It is obvious that a direct relationship and possible responsibility exist only in the case of nursing schools attached to or affiliated with medical schools which are in membership in this Association. In these schools the type of instruction and general standards of nursing may affect the education of physicians which is our special responsibility. The magnitude of this responsibility in terms of the number of schools of medicine having complete or partial responsibility for schools of nursing will become apparent from statistics to be presented later. But, it is evident also, that medicine and the medical profession have a vital interest in nursing and in the proper education of nurses. It seems to us, further, that this Association is one of the medical organizations from which informed opinion should be expected on this subject.

Following this line of reasoning, the Committee has decided to present its report in three parts: the first is intended to express our understanding of the present situation in nursing and nursing education. If the Association accepts the report, the Committee recommends that it be submitted to the organizations interested in nursing education, such as the American Nurses Association, the National League of Nursing Education, the Committee on Grading of Nursing Schools, the American,

*Read at the Forty-Third annual meeting of the Association of American Medical Colleges held in Philadelphia, Nov. 14-16, 1932.

Catholic and Protestant Hospital Associations and the Council on Medical Education and Hospitals of the American Medical Association.

The second part will deal with the university schools of nursing, with special reference to the interrelationships between schools of medicine and schools of nursing under university control. The third part of the report will embody the recommendations of this Committee.

It will be noted that our general point of view is that nursing education, on account of its relation to medical practice, is a subject in which medical educators should take an interest. This, again, does not mean that medicine should dominate the situation. Rather, nursing should control its educational machinery with the advice and aid of other educators.

Part I.—The Status of Nursing Education

We believe that the following facts have been amply demonstrated:

1. Nursing is an overcrowded profession. We regard this situation to be inimical to public welfare, because there must be in such excess a lower average of ability and training than in a smaller and more carefully selected group. Over-production in education always tends to lower quality. Perhaps, the worst feature is that the most desirable candidates avoid an overcrowded profession.

2. There are far too many nursing schools, students and graduates. Accepting as fact that there are about 2,000 nurses' training schools, 90,000 students and 22,000 graduates annually, the seriousness of this situation requires neither demonstration nor comment. We have only to hark back to the situation in medical education when there were more than 160 medical colleges and recall our concern with the threatened overproduction and lower standards among doctors, to appreciate the alarm among nurse educators at the present situation. Our opinion is that not only nurse educators but also medical educators and the medical profession have interest in and responsibility for this condition of affairs. There are also implications of public welfare.

3. While aware of difference of opinion among physicians we think it can be demonstrated that the weight of medical opinion is to the effect that the safe nurse in serious situations is the one of good intelligence and considerable scientific attainment. To these qualifications must be added adequate experience and technical training. Of course, the nurse must have outlook and personality. As a profession, nurses need at least the minimum education demanded of public school teachers. From this line of thought we conclude that:

(a) Nursing merits educational advantages, coordinate, in a measure, with those enjoyed by the medical and other professions. Such advantages are not at this time generally available to students of nursing.

(b) The medical profession and the medical colleges have a vital interest in the improvement of educational facilities in nursing and in the strengthening of schools of nursing.

(c) Nursing education should be more generally and more closely integrated with other educational fields. Nursing schools should be made parts of existing universities and colleges, and the curriculum in nursing should be made to conform to college standards with all that is implied in this statement as to requirements for admission, type of teachers engaged, equipment and facilities available, requirements for advancement and graduation.

In support of this opinion we need only recall the effect on medical education when the schools of medicine passed, to so large an extent, under university control. In the field of nursing education, however, the situation is somewhat different. Historically, the hospitals have developed the schools of nursing and they are now, to a very large extent, in command of the field. To dispossess them suddenly of all control would be impossible and unfair. While, eventually, if schools of nursing are to be of college rank, most or all of them must pass under college or university administration, it appears that hospitals must even then continue to have some voice in the matter because instruction of nurses is related to the hospital's own task, that of caring for the sick. But this management factor from the hospital side should not extend to the control of curriculum, teaching, ratio of theory and practice or other educational matters; nor to the determination of hours of duty, beyond securing service commensurate with its educational value to the student and not in excess of the value of maintenance supplied and other costs borne by the hospital in keeping up the school.

(d) Methods should be devised whereby only a high type of student with an aptitude for the work will be admitted to nursing schools.

The usual college entrance qualifications and an aptitude test, similar to that now used by some of the other professional schools, should be required. Such a test is needed in nursing even more than in medicine because high school graduates are a less highly selected group than are students who have had two years of college work. While it is not the duty of this Association to sponsor or develop such a test, it might be a gracious thing for us to offer our experience and assistance to a properly constituted body desiring to undertake this task. It is plain, that having

in mind the future position and responsibilities of nursing educators, too much care cannot be given to the selection of students for the nursing course.

Your Committee fully recognizes that the developments here suggested would tend to elevate standards in nursing and nursing education to a level which, while fully justified in all cases, and perhaps obtainable in university schools, might not prove feasible at an early date in non-affiliated schools. Nevertheless, the future of the non-affiliated school cannot be ignored by us since this school, too, will have an effect on medical education and medical practice. Further, the university school should not, because of the slower progress of the non-affiliated schools, cease its trend toward progressively higher standards in nursing. If those standards entail greater financial support than schools of nursing now receive, and if the hospitals now conducting schools of nursing without educational affiliation would thus be confronted with additional economic problems, it is still our opinion that the benefits for the profession of nursing itself, as well as for the ultimate aid to the hospital in the achieving of its primary purpose, the service to the patient, would fully justify courageous facing of the difficulties and the increased expenditures. In a word, we think that the university nursing schools should adopt the standards outlined as soon as possible and that the other nursing schools should make the same policies effective as soon as conditions permit.

These ideas are respectfully submitted for consideration by this Association, if adopted they should be communicated to those directly responsible for or indirectly interested in the education of nurses. We reiterate that the question is important alike to the profession of nursing, to medical educators and medical men, to hospitals, to patients and to the public welfare.

Part II.—Nursing Education in the University Schools

1. **ADMINISTRATION**—The administrative control of the School of Nursing should be lodged entirely in the university. The relation of the School of Nursing to the School of Medicine and to the other schools or colleges of the university will depend, in large part, on the general organization of the university. No single plan of relation or organization can be prescribed. It is reasonable to suggest that such a degree of autonomy as will assure ample expression of nurse opinion and initiative should be embodied in any acceptable plan.

In the course of the Committee's work, letters of inquiry were sent to 74 medical colleges (9 of which were Canadian institutions). Copies

of nursing school catalogues were furnished and answers to the letters were returned by all but two of those addressed.

For the purpose of showing the degree of the university's responsibility in nursing education and the relations of the school of medicine to the schools of nursing, we summarize the situation as it presents itself to us from a study of the answers and catalogue statements:

Number of schools of medicine to which Committee sent letters of inquiry	74
Number of schools of medicine from which an answer ¹ was re- ceived	72
Number of schools of medicine sending answers and catalogue.....	63
Number of schools of medicine associated with universities hav- ing both schools of medicine and schools of nursing as separate units in the university organization	27
Number of schools of medicine associated with universities hav- ing some form of relation to schools of nursing, the latter, however, not being separate organizational units within the university organization	26
Number of schools having relations with schools of nursing in which there is not complete university organization.....	9
Number of schools of medicine associated with schools of nurs- ing in which the latter is designated as a school of nursing education (without relation to the School of Medicine).....	1
Total.....	63

It is, therefore, obvious that there is no uniformity of organization among the colleges reporting that the school of nursing is conducted under the auspices of the university. It is, furthermore, obvious that in at least 53 institutions, the school of medicine is more or less intimately associated with and responsible for the instruction of the nurse; in 26 of these, through the university control of both the school of medicine and the school of nursing, and in 27 of these, through instructional organization. Five of the schools stated that the school of nursing is a distinct autonomous unit of organization, entirely coordinate with other

1. For those interested in the details of these answers, the following may here be recorded:

In reply to the question: "What is the relation to the College of Medicine?", the following answers were returned:

16 (including 1 Canadian school) stated that the schools were a division of the College of Medicine, or under the management of the dean of the medical school.

3 replied that the school was a separate school in the university.

2 stated that there were no relations, except that members of the medical faculty participated in the teaching of student nurses.

2 stated that the dean of the medical school was a member of the Executive Committee of the nurses' school.

2 indicated that there were close relations but no control of management by the medical school.

The remaining replies may be recorded as follows:

1—Members of medical faculty on controlling committee.

1—Close association, advisory rather than directional.

1—Approve appointment of instructors and supervise curriculum.

1—Operates under own director.

1—A department of hospital which, in turn, is a department of the medical college.

1—Under hospital management.

1—Joint control—college and hospital.

1—Curriculum subject to approval of medical faculty.

1—No relation.

schools and colleges in the university.

As stated in our previous report: "Those universities conducting schools of medicine with their associated hospital facilities are in a strategic position to make valuable contributions to the field of nursing." Such universities should take the lead in improving and developing nursing education.

It is, therefore, obvious that different universities have developed relationships for nursing education in widely diverse manners. It is neither desirable nor feasible to interfere with this organizational diversity. Nevertheless, basic principles of organization for the purpose of insuring educational adequacy can certainly be agreed upon. We submit, therefore, that in all university schools of nursing there should be:

- (a) A sound form of administrative organization on a university level.
- (b) One of the many forms of faculty organization which have proven satisfactory in other schools of the university.
- (c) Independence of budgetary control to the same extent as obtains in other schools or colleges of the same university.
- (d) Curricular control of both theoretical and practical courses coordinate with the curricular control in other divisions of the same institution.

Another aspect of the situation must here be presented. Summarizing the situation only for those schools which made official statements on this point, the Committee finds that: (1) two schools offer only a five year course leading to the degree of Bachelor of Science in Nursing; (2) two schools give only the conventional three year course; (3) twelve schools give both the conventional three year course and the five year course leading to the degree of Bachelor of Science in Nursing; (4) one school gives the conventional three year course and a four year course leading to the degree of Bachelor of Science in Nursing. It is clear that the university schools have thus far not recognized a specific responsibility in the field of nursing education. This Committee is of the opinion that the university schools have a threefold specific function:

- (a) That of developing the educational curricula for such positions as teachers of nursing subjects, school and hospital administrators, public health workers and workers in specialized nursing fields.
- (b) That of offering model three year courses in which the best educational practice is illustrated, not merely for the purpose of educating the traditional registered nurse, but also for the purpose of assisting by example and progressive educational experimentation the other schools of nursing.
- (c) That of developing to an increasingly higher educational level the five year course leading to the degree of Bachelor of Science.

2. THE DOUBLE CURRICULUM.—With the acknowledged shortage of competent instructors in all schools of nursing, the desirability of nurse teacher training seems evident.

We advocate that nurse education be on the college level. This implies that the teachers of anatomy, physiology, etc., be persons who could be recommended by university departments of the respective fields as instructors in colleges of arts and sciences or in similar institutions. The necessary courses in theory and practice may well be arranged through the College of Education.

Two plans for advanced instruction in nursing have thus far been in operation: the first, in which the high school graduate is first given the traditional three year course in nursing and afterward an additional two years of college study; and the second, in which the two years of preparatory collegiate training are demanded as a prerequisite for the three years of the curriculum in nursing. Both these plans are deemed acceptable at present by your Committee but we feel that the university schools should be encouraged to experiment with the view of determining the relative merits of the two plans.

The five year curriculum is longer than the usual curriculum leading to the degree of Bachelor of Arts. It may be that a safe curriculum with less, but adequate, nursing practice could be devised. This, too, should be made a matter of experimentation by the universities. The Committee, however, warns against any abbreviation of study or the formulation of requirements for any degree which could not be favored by the graduate schools and which could not be approved by them as being the equivalent of the Bachelor of Science degree granted by professional schools. In other words, whatever plans are approved, the curriculum should be such as to be acceptable to the graduate schools for registration and for further work toward advanced degrees.

Similar reasoning may be put forward regarding courses in administration and public health. In each case, it would seem reasonable that the mechanism be flexible enough to enable the high school graduate, on the one hand, to proceed directly by a well planned curriculum to her chosen objective, or, on the other hand, to permit the three year graduate to reverse the order and obtain her objective by supplementary studies.

We would not counsel that every university school organize curricula for all lines of nurse specialization. This should be governed by circumstances, particularly by the facilities and the finances available. If a university can do one of these jobs well as matters are at present, it may consider itself fortunate.

3. CURRICULAR CONTENT. We have thus far pointed out the diversity which exists with respect to the organization and administration of schools of nursing. No less a diversity exists with reference to the curricular content and evaluation in different schools, if the catalogues which the Committee has studied can be taken as mirroring actual conditions. It would manifestly be impossible to summarize here adequately all that might be said concerning curricular content and its evaluation. The Committee has studied more intensively seventeen of the university nurses schools selected because for these catalogues and related sources of information were available, and because in these institutions the measure of university influence seems to be pronounced.

In addition to (a) general comments on the curricular content in these seventeen schools, the Committee submits brief comments on (b) basic science courses; (c) medical courses; (d) nursing courses and (e) cultural courses.

(a) General Comment:

In the schools here under review it seems clear that acceptable principles of curricular organization are observed better than they are in a large proportion of the non-university schools. Thus, the general principles of course sequence, course load, time distribution, teaching load per teacher, the relations between theoretical and practical courses and other similar features are observed with some approximation to collegiate standards. On the other hand, with reference to each of these features not only is there considerable diversity in these different schools but in some of them there is a noteworthy falling short in one or more details when the situation in these schools of nursing is compared with the situation in the accredited college.

(b) Basic Science Courses:

The basic science courses are obviously unduly condensed. In a large percentage of the schools studied an effort is made to crowd anatomy, physiology, chemistry, bacteriology and an introductory course in pharmacology into the preparatory four months period. Such an arrangement obviously could not meet standard collegiate requirements, and, as a result, in most of these schools the credit value given is entirely too low to meet the demands of a sound educational quantitative standard. Two credit hours in each of these various subjects are by far the most common credit value assigned, thus falling short of what is generally regarded as a minimal credit value of the collegiate course in the elementary laboratory sciences.

With reference to special subjects, anatomy and physiology are still taught as one course by no fewer than twelve of the seventeen schools. When one bears in mind the fundamental difference in viewpoint in these two sciences, one cannot but doubt the educational success of the procedure here being discussed. The combined course in anatomy and physiology carries a credit value ranging between 3 and 5 semester hours in these twelve schools, and the clock hours devoted to their study vary between 45 and 120 hours. The five schools giving anatomy and physiology as separate subjects vary between 45 and 110 clock hours for anatomy and between 22 and 48 hours for physiology. It seems clear that several schools are teaching these subjects without adequate laboratory work. Only five of the schools make an attempt to spread these subjects over more than one semester.

The situation in chemistry shows a still greater diversity. The clock hour requirements range between 30 and 125 hours and the credit hour requirements between 2 and 8 semester hours.

In bacteriology, the clock hour requirements are fairly uniform, being 45 in all except four schools, but the credit hour evaluation ranges between 1 and 5 semester hours. The introductory course in pharmacology, variously designated "Drugs and Solutions," "Elementary *Materia Medica*" or "Elementary Therapeutics," is given in the preliminary semester in all except five schools. The clock hour requirements range between 15 and 45 and the credit hour requirements between 1 and 2 semester hours.

By no stretch of academic standards can most of these courses be considered adequate for college credit. One has but to note the description of courses in chemistry, anatomy and physiology required in the curricula for physical education or home economics in the same university to be persuaded of the fact.

(c) Medical Courses:

A brief discussion of courses in medical, surgical, obstetric and pediatric nursing may be taken as fair samples of the educational situation with reference to all clinical courses. In only five schools does a course in disease precede a course in the technique of medical nursing. In all of the other schools the instruction on disease seems to be given simultaneous with instruction on the nursing aspects of these diseases. Some schools give these various courses in the first year, others in the second and still others in the third year. The clock hour requirements range between 8 and 75 hours. It is not clear from catalogue statements to

what extent bedside instruction in these conditions is expected to compensate for the lack of more formal methods of instruction.

What has been said of medical nursing may also be stated concerning surgical, obstetric and pediatric nursing. The range of clock hour requirement is decidedly wide and as far as catalogue statements are concerned little can be learned regarding the total curricular demands in these various schools. It seems likely from a study of the catalogues that the principles of sequence are probably more neglected in this branch of the curriculum than in any other.

(d) **Nursing Courses:**

It might be expected that in university schools particularly, the professedly nursing courses should be administered with academic precision. In all likelihood, this is the case, but the catalogue statements give relatively little evidence on this point.

In the basic course on the principles and practice of nursing, for example, we find not only a wide divergence in clock hour requirements, giving evidence probably of a lack of clarification regarding the objectives to be obtained, but also what is seemingly a relatively low instructional demand. The requirements in terms of clock hours range between 90 and 210, and only four of the schools have made an effort to evaluate their work in terms of the usual credit hours.

(e) **Cultural Courses:**

If the nursing curriculum is to be estimated as the equivalent of collegiate training, one would expect the inclusion of some courses of a non-professional character here designated, for lack of a better name, as cultural courses. Thirteen of the schools attempt to give their student nurses such courses. Under this head may be included such courses as those in philosophy, religion, general psychology, modern languages, English, public speaking, history and sociology. The number of hours devoted to such studies show a wide range and only a few of the schools afford catalogue evidence of treating them with a measure of seriousness.

SUMMARY

Summarizing the situation as here presented, the following points seem clear: (a) the basic science courses are given in some university schools without reference to fundamental collegiate requirements;

(b) the instruction on clinical subjects is in some cases not sufficiently differentiated from instruction in nursing in the corresponding

fields, thus probably developing in the student's mind a hazy and inadequate notion regarding disease conditions;

(c) the clarification of objectives for courses in nursing practice seems definitely indicated;

(d) the giving of cultural courses to nurses not only in the preliminary period but throughout the three years is probably highly desirable.

Any serious attempt to make the nursing curriculum conform to college standards demands a reduction of "hours of duty" to what is necessary for the attainment of reasonable technical proficiency and a corresponding increase in the time for study of scientific and cultural subjects.

It is clear that in this brief summary no attempt can be made to suggest the relative stresses which should be laid on these various classes of courses.

Part III.—Recommendations

Your Committee, therefore, makes the following recommendations:

1. That this Association hereby records its deep interest in the developments now taking place in nursing education and that it regards these developments as significant for the future not merely of medical practice but also of medical education.

2. That since nursing is fundamentally a profession auxiliary to medicine in its aims and procedures, nursing education, despite the progress which has already been made, would do well to accept the directive guidance of medical education concerning many of the features of nursing education; and that, therefore, the influence of the School of Medicine should increasingly pervade the development of the School of Nursing.

3. That those universities which are conducting schools of nursing should bend every effort toward the safeguarding of educational standards in these schools by increasing the measure of educational control over these schools and by conducting them on a collegiate level. This means that they should not use their nursing schools as service adjuncts of their hospitals but, if necessary, should use such additional university resources as may be necessary to bring their nursing schools up to the general level of the other colleges.

4. That the university schools of nursing elaborate educational programs not alone for the traditional three year curriculum in nursing, but also and with major emphasis for an adequate curriculum leading to the degree of Bachelor of Science, as well as other advanced curricula in the various fields of specialized nursing endeavor.

5. That the university schools of nursing be encouraged to undertake sound educational experimentation in nursing education with special reference to the solution of existing controversies concerning curricular administration.

6. That universities accept the principle that courses in the curriculum of the school of nursing be formulated and administered with the same seriousness and on the same collegiate levels as are demanded of accredited Colleges of Arts and Sciences, particularly with reference to the curricular content, the diversification of courses, the sequence of courses, the quantitative evaluation and full requirements of courses and a satisfactory equilibrium between theoretical and practical courses; and that, therefore, the form of administrative and instructional control in these schools be organized with the view of safeguarding accepted standards in all of these respects.

The universities can also help raise standards by refusing full credit on their advanced courses to graduates of three year courses which do not maintain reasonable standards.

7. That this Association appoint a committee which will not only offer its services concerning the medical aspects of nursing and nursing education to the other groups interested in the field, but will also initiate under the guidance and with the authority of this Association, such activities in the field of nursing education as may from time to time be found necessary for the safeguarding of the interests of Schools of Medicine in the progressive development of Schools of Nursing.

(Signed) A. M. SCHWITALLA
 E. P. LYON
 A. C. BACHMEYER, Chairman

Analysis of Entrance Credentials of Freshman Class 1931-1932*

FRED C. ZAPFFE

Secretary Association of American Medical Colleges
Chicago, Illinois

Since 1928, the entrance credentials of the freshman class of 75 medical schools in the United States have been tabulated for the purpose of determining how many applicants offered only the minimum of credits—60 hours—and how many offered more than that number of hours, including those who came with a degree, baccalaureate or other.¹

It has been stated that in order to assure themselves of matriculation, applicants have deemed it wise to be in a position to offer more than the minimum. It is true that the number coming with the minimum has steadily lessened; that is, the number of those accepted has lessened; but whether the actual number has lessened is a question that will be answered when the study of applicants for 1932 matriculation has been completed. However, Tables 7 and 8 show what has happened in the past four years.

Table 1 presents the results of the analysis by schools. Each one of the remaining tables is sufficiently explanatory so as not to call for further comment. The figure depicting the summary of the entrance requirements by a number of black blocks gives the picture at a glance. Tables 7 and 8 give a comparative summary for the four years in which the study has been made.

It is not possible to draw any conclusions from this study at this time. It is wholly informative, depicting a certain trend which will shortly demand careful study and investigation. In a study made of student accomplishment in medical schools during the first year, the information gained from the present study has been correlated with accomplishment, and some interesting facts have been obtained—for which that report should be consulted.

The Canadian medical schools have been included in this study only to the extent of showing how many students from the states elect to

*Presented at the Forty-third Annual Meeting of the Association of American Medical Colleges, held in Philadelphia, Nov. 14-16, 1932.

1.—This study has been made possible through the courtesy of the Council on Medical Education and Hospitals of the American Medical Association, which gave the Association the use of the students' biographical record blanks. These blanks are filled out by the students themselves, sent directly to the Council and filed as part of the prospective practitioner's biographical record.

The previous studies were published in the JOURNAL of the Association of American Medical Colleges, July, 1929, p. 243; July, 1930, p. 231; July, 1931, p. 211. The publication of the report on the 1931 class was delayed by request of the Council on Medical Education of the American Medical Association.

TABLE 1. ANALYSIS OF ENTRANCE CREDENTIALS, CLASS OF 1931,
BY SCHOOLS

School	Admission Requirements	Degrees			4 or more years No degree	3 years	2 years	Total	
		A.B.	B.S.	Others					
Alabama	70 hrs.	23	9	1		18	1	52	1 A. M.
Arkansas	60 hrs.	7	1	1	1	21	14	45	1 Ph. G.
Medical Evang.	64 hrs.	8	3	5	1	32	55	104	4 A. M., 1 B. R. E.
Stanford	90 hrs.	12	3	1	3	30		49	1 Ph. C.
California	3 yrs.	16	6	2	4	30	2	60	1 Ph. G., 1 A. M.
South. California	90 hrs.	20	3		2	24	1	50	
Colorado	90 hrs.	12	3	3	3	20	6	47	2 A. M., 2 Ph. G.
Yale	3 yrs.	28	12	8	2	4	1	55	1 A. M., 7 Ph. B.
Georgetown	90 hrs.	37	70	9	1	38		155	1 M. S., 8 Ph. B.
Geo. Washington	60 hrs.	14	14		1	26	24	79	
Howard	60 hrs.	17	29	1	3	8	1	59	1 B. S. A.
Emory	60 hrs.	8	15	1	2	25	7	58	1 Ph. B.
Georgia	60 hrs.	5	7	1	2	9	16	40	1 Ph. B.
Chicago	Degree	34	59	4	1			98	2 Ph. B., 1 M. S. 1 Ph. C.
Loyola	60 hrs.	18	26	6		19	80	149	1 LL.B., 3 Ph. B., 1 D.O.S., 1 B.S.B.
Northwestern	85 hrs.	22	20	7		71		120	2 A. M., 2 Ph. B., 1 Ph. D., 1 Ph. C., 1 M. S.
Illinois	60 hrs.	16	19	9		26	105	175	4 Ph. C., 2 Ph. G., 1 Ph. B., 1 D.D.S., 1 Examen. Art.
Indiana	60 hrs.	17	4	3	1	8	84	117	3 Ph. C.
Iowa	60 hrs.	12	4	2		16	52	86	1 M.S., 1 D.O.
Kansas	60 hrs.	28	8		1	23	21	81	
Louisville	60 hrs.	25	16	1	2	31	10	85.	1 Ed. B.
Tulane	60 hrs.	24	14		2	36	41	117	
Maryland	60 hrs.	24	20		2	29	33	108	2 A. M.
Johns Hopkins	Degree	48	20	2				70	1 B. E., 1 A. M.
Boston	90 hrs.	24	28	3	1	11	1	68	1 Ph. B., 1 E. E. 1 D.M.D.
Harvard	60 hrs.	86	22	9	2	6		125	3 M. S., 2 A. M., 4 Ph. B.
Tufts	60 hrs.	41	39	13	1	21	8	123	11 Ph. B., 1 D. O., 1 Ph. G.
Detroit	90 hrs.	27	21	3	2	43	1	97	2 Ph. G., 1 M. S.
Michigan	90 hrs.	42	9	7	1	67		126	2 M. S., 1 Ph. B., 1 Ph. G., 1 Ph. C., 1 B.S.P., 1 D.D.S.
Minnesota	60 hrs.	18	5	3	14	31	51	122	1 Ph. B., 1 B. Ed., 1 D.D.S.
Mississippi	60 hrs.	2	1			5	16	24	

School	Admission Requirements	Degrees			↑ or more years No degree	3 years	2 years	Total
		A.B.	B.S.	Others				
St. Louis	60 hrs.	23	54	4	4	40	33	158
Missouri	90 hrs.	13	2		2	26	1	44
Washington	90 hrs.	36	16	1	2	23	78	1 Ph. B.
Creighton	60 hrs.	8	11	1	2	21	35	78
Nebraska	65 hrs.	13	3	1	1	13	60	91
Dartmouth	85 hrs.	2				14		16
Albany	60 hrs.	22	8	1		2		33
Columbia	72 hrs.	63	25	2	3	16	1	110
Cornell (Ithaca) (N. Y.)	Degree or Equiv.	8	7			11		26
Long Island	72 hrs.	45	38	6	5	10	4	108
N. Y. Homeop.	60 hrs.	20	17	3	2	30	3	85
Syracuse	60 hrs.	20	3	2	1	24	3	53
N. Y. Univer.	3 yrs.	29	71	4		34		138
Buffalo	60 hrs.	22	12	2	1	12	28	77
Rochester	90 hrs.	27	16	1		6		50
Duke	70 hrs.	19	6	2	3	23	11	64
No. Carolina	60 hrs.	12	6	1	3	15	1	38
Wake Forest	62 hrs.	5	6			19	1	31
No. Dakota	60 hrs.	6	4			14	2	26
Ohio	60 hrs.	46	6	2	8	29	7	98
Cincinnati	60 hrs.	14	5	3		21	40	83
West. Reserve	3 yrs.	36	17	1	3	21		78
Oklahoma	60 hrs.	14	9	2	2	7	29	63
Oregon	90 hrs.	16	10	2	14	22		64
Hahnemann	60 hrs.	20	42	4		36	17	119
Jefferson	90 hrs.	65	86	5	2	1		159
Temple	90 hrs.	23	34	6	1	42	5	111
Pennsylvania	90 hrs.	61	40	4	1	13	1	120
Pittsburgh	60 hrs.	1	13	1		22	30	67
Woman's	60 hrs.	15	13	2		5	6	41
So. Carolina	60 hrs.	5	11	1	2	15	1	35
So. Dakota	60 hrs.	6	4			7	4	21
Meharry	60 hrs.	15	20		5	9	3	52
Tennessee	90 hrs.	5	10	6		7	49	77
Vanderbilt	3 yrs.	17	10	1		22		50

School	Admission Requirements	Degrees			4 or more years	No degree	3 years	2 years	Total
		A.B.	B.S.	Others					
Baylor	60 hrs.	13	8	5	11	35	40	112	4 Ph. G., 1 B.S.S.-A.M.
Texas	60 hrs.	25	7	3	8	42	15	101	1 B. B. A., 1 A. M., 1 A. B.-B.S.-Ph. G. 1 one year
Utah	3 yrs.	12	2	1	4	13	1	33	1 B. A. B.
Vermont	72 hrs.	5	10	1	5	15	5	41	1 Ph. B.
Virginia	60 hrs.	9	14	2	4	22	14	65	1 A.B.-B.S., 1 L.L.B.
Med. Coll. Va.	60 hrs.	20	23	5	3	19	15	85	4 Ph. G., 1 M. S.
West Virginia	64 hrs.	20	11	1	2	29	15	78	1 Ph. C.
Marquette	64 hrs.	10	10		2	23	29	74	
Wisconsin	60 hrs.	14	8	1	7	51	15	97	1 Ph. B., 1 1½ yr.

TABLE 2. SUMMARY IN PERCENTAGES

2 years	19.0%
3 years	26.5%
4 years or more	2.7%

DEGREES—

A. B.	27.0%
B. S.	21.2%
Others	3.5%

SUMMARY

No degree	48.2%
Degrees	51.7%

TABLE 3. DEGREES OTHER THAN A.B. AND B.S.

A. M.	22	Ph. G.	33	Ph. C.	23
M. S.	20	Ph. B.	72	Ph. D.	2
A. B. & B. S.	7	D. D. S.	6	Ed. B.	3
D. O. S.	3	L. L. B.	2	A. B., B.S., Ph.G....	1
B. S. A.	1	H. E.	1	M. E.	1
L. L. S. (DMS)....	1	B. S. B., D. D. S.	1	Ph. C., Ph. G.	1
Examen. Art.	1	D. M. D.	1	E. E.	1
B. A. B.	1	B. B. A.	1	B. S. P.	1
G. Cp.	1	B. R. E.	1	Dipl. Sea Capt.	1
B. P.	1	B. P. E.	1	B. B. S., A. M.	1

TABLE 4. MATRICULATION IN CANADIAN MEDICAL SCHOOLS
1931

Alberta	25	1 from U. S. A.
Dalhousie	47	4 from U. S. A.
Toronto	132	4 from U. S. A.
Queen's	58	6 from U. S. A.
Western Ontario	42	3 from U. S. A.
McGill	95	.46 from U. S. A.
Montreal	52	4 from U. S. A.
Laval	54	4 from U. S. A.
Manitoba	65	0 from U. S. A.
Saskatchewan	35	4 from U. S. A.

Total: 605 students; 76 from U. S. A.; 54 educated in U. S. A.

TABLE 5. ENTRANCE REQUIREMENTS OF ALL MEDICAL SCHOOLS

60 hours	40	53.3%
65 hours	4	5.3%
70 hours	5	6.6%
85 hours	2	2.6%
90 hours	14	18.6%
120 hours	2	2.6%
3 years	6	8.0%
Degree	2	2.6%

TABLE 6. ENTRANCE REQUIREMENTS OF STATE UNIVERSITY MEDICAL SCHOOLS

60 hours	18	62.1%
65 hours	2	6.9%
70 hours	1	3.4%
72 hours	1	3.4%
90 hours	5	17.2%
3 years	2	6.9%

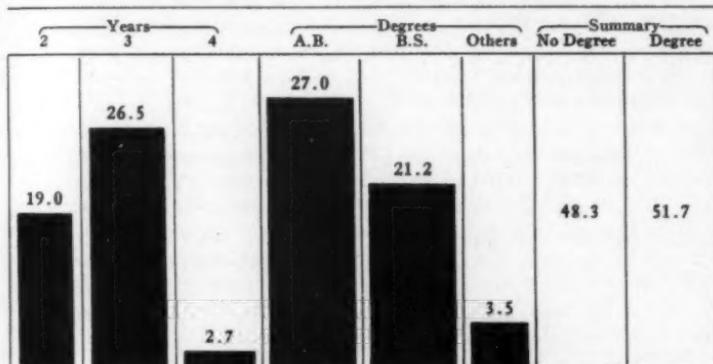
TABLE 7. COMPARATIVE SUMMARY OF ENTRANCE CREDENTIALS PRESENTED BY STUDENTS ENTERING MEDICAL SCHOOLS IN 1928, 1929, 1930 AND 1931

Year	No. Students	2 yrs.	3 yrs.	4 yrs.	Degrees			Total
					A.B.	B.S.	Others	
1928	5,950	1,363	1,830	247	1,331	983	196	2,510
		22.9%	30.7%	4.2%	22.3%	16.5%	3.3%	42.2%
1929	6,359	1,462	1,752	265	1,613	1,090	186	2,889
		23.1%	27.5%	4.1%	25.3%	17.1%	2.9%	45.2%
1930	6,645	1,296	1,850	296	1,723	1,339	141	3,203
		19.5%	27.8%	4.4%	25.3%	20.1%	2.1%	47.5%
1931	6,074	1,157	1,609	166	1,645	1,285	212	3,142
		19.0%	26.5%	2.7%	27.0%	21.2%	3.5%	51.1%

TABLE 8. SUMMARY BY PERCENTAGES OF ENTRANCE CREDENTIALS OF CLASSES OF 1928, 1929, 1930, 1931

Year	No. Stud.	Years			Degrees			Summary	
		2	3	4	A.B.	B.S.	Others	No Deg.	Degree
1928	5,950	22.9	30.7	4.2	22.3	16.5	3.3	57.8	42.1
1929	6,359	23.1	27.5	4.1	25.3	17.1	2.9	54.7	45.3
1930	6,645	19.5	27.8	4.4	25.3	20.1	2.1	51.7	47.5
1931	6,074	19.0	26.5	2.7	27.0	21.2	3.5	48.2	51.7

SUMMARY OF ENTRANCE CREDENTIALS OF CLASS OF 1931



study medicine in a Canadian school, for one reason or another. Another study made several years ago of applicants for admission to medical schools showed that more than a few students rejected by American schools gained admission to a Canadian school. A survey of Table 4 shows that this is not true for 1931, inasmuch as comparatively few American students were registered in the medical schools of Canada, except one, McGill, but the selective policy of this school is so well known, that the 46 American students accepted by McGill in its 1931 class must have been exceedingly well prepared to enter on the study of medicine. Furthermore, McGill has never been a school for Canadians only; it is an international school of medicine, hence almost 50 per cent of the freshman class consists of American students.

Licensure of Graduates of Foreign Medical Schools

The following resolution was introduced by Dr. Ross V. Patterson at the annual meeting of the Association held in Philadelphia, Nov. 14-16, 1932, and was unanimously adopted:

WHEREAS, the Association of American Medical Colleges is interested in maintaining a uniformly high standard of education for the practice of medicine; and

WHEREAS, the achievements of graduates of foreign medical schools in the various state medical licensing examinations during the past ten years have been appreciably lower than the achievements of graduates of acceptable American and Canadian schools; and

WHEREAS, an increasingly large number of American students who have been refused admission to acceptable medical schools in the United States are studying medicine in foreign medical schools in the expectation of returning to the United States to practice; therefore be it

RESOLVED, that it is the sense of the Association of American Medical Colleges that the indiscriminate licensing of both foreign-born and American-born graduates of such foreign medical schools will result in lowering the quality of medical service in the United States; and be it further

RESOLVED, that it is the sense of the Association of American Medical Colleges that a prompt investigation of foreign medical education, particularly in reference to licensure in the various states, is imperative, and that this Association bring to the attention of the various bodies charged with the responsibility of licensing physicians to practice throughout the United States the necessity for prompt and thorough investigation of this problem; and be it further

RESOLVED, that a copy of these resolutions be sent to the Council on Medical Education and Hospitals of the American Medical Association, to the Federation of State Medical Boards of the United States, to the secretary of each state medical licensing board and to the National Board of Medical Examiners.

JOURNAL
OF THE
Association of American Medical Colleges

Volume 8

JANUARY, 1933

Number 1

DR. FRED C. ZAPFFE, Editor, 5 South Wabash Ave., Chicago.

The Philadelphia Meeting

The forty-third annual meeting of the Association was held in Philadelphia, November 14-16.

The attendance exceeded all expectations. Sixty-five of the member colleges were represented by 100 delegates. The total number of registrations, not including members of the faculties of Philadelphia schools who were not official delegates, was 155. This registration exceeded the registration at any previous meeting of the Association.

The program was carried out as scheduled and met with universal approval. The papers read and the discussions thereof will be published in the JOURNAL of the Association.

At the Executive Session, the dues were reduced to \$150 as of September 1, 1932.

The combined office of secretary-treasurer was separated into two offices, each with a separate incumbent.

The Executive Council has been increased to eight members, consisting of the president, vice-president, treasurer, out-going president and four elective members (as heretofore), the secretary acting ex-officio, without a vote.

The entrance requirements were amended, the essential change being in the dropping of the specific prescription as to number of "hours" in the required subjects.

The officers for the ensuing year are: President, Dr. Louis B. Wilson, Rochester, Minn.; vice-president, Dr. Ross V. Patterson, Philadelphia; secretary, Dr. Fred C. Zapffe, Chicago; treasurer, Dr.

B. C. H. Harvey, Chicago. The Executive Council consists of: Ross V. Patterson, chairman; H. G. Weiskotten, C. C. Bass, A. C. Bachmeyer, G. Canby Robinson, F. G. Blake, Louis B. Wilson and B. C. H. Harvey.

The next meeting (1933) of the Association will be held in Minneapolis and Rochester, Minn., probably late in October. The exact dates will be decided by the Executive Council in the near future.

New Entrance Requirements

The following are the entrance requirements which became effective after their adoption at the annual meeting of the Association held in Philadelphia, November 14-16, 1932. They differ from the previous requirements in that the detailed prescription as to "hours" of credit has been dropped.

Section 4: Subsection I.—The minimum of collegiate credit required for entrance to medical schools and colleges in membership in the Association shall be not less than two full academic years, which shall include English, theoretical and practical courses in physics and biology, and in general and organic chemistry completed in institutions approved by accrediting agencies acceptable to the Executive Council of the Association. Exception may be made under this section in that any member may admit applicants who have fulfilled the requirement in American and Canadian institutions not approved by such accrediting agencies, provided that all admissions so made be reported to the Executive Council and

shall be published in the next Annual Report of the Council.

All collegiate instruction given in satisfaction of this requirement must be based on the same entrance requirements and must be of the same quality and standard of instruction as that required for a baccalaureate degree in the institution in which the candidate receives his preparation.

Subsection II.—Admission to medical schools and medical colleges in the Association may be by examination.

Examinations for the purpose of admission by this method shall be conducted by institutions acceptable to the Executive Council of the Association, under the following conditions:

(a) Candidates who have completed two years of collegiate instruction and present evidence of general scholarship of high order, but who lack credits in not more than two of the required subjects, may be admitted on successfully passing examinations in these subjects.

(b) Candidates who have completed three years of collegiate instruction and present evidence of having accomplished work of distinction in one or more fields of learning, but who lack credits in any or all of the required subjects, may be admitted on successfully passing examinations in these subjects.

Section 6: Any medical school or medical college in membership in the Association may, with the consent of the Executive Council, conduct a six year combined collegiate and medical curriculum, provided conditions equivalent to those laid down in Sections 4 and 5 are fulfilled. The medical school must submit to the Executive Council of the Association, the proposed six year curriculum, giving the sequence of studies and the content of each course offered or any subsequent changes that may be contemplated before they go into effect.

Recognition of Foreign Medical Schools

A not inconsiderable number of graduates of foreign medical schools have always sought licensure to practice medicine in the United States. Unquestionably, New York State has had many more such applications than any other state in the Union. It has become, more and more, a vexatious problem to solve because of the absence of adequate, reliable information as to the academic standing of many foreign universities, especially their medical schools. Furthermore, for some time now, many American students, failing to be admitted to one of our own medical schools, for one reason or another, have entered foreign schools with the avowed intention of returning "home" to practice. As "home" for many of these students is somewhere in the state of New York, usually the City of New York, the Board of Medical Examiners of the State of New York has been flooded with demands for licensure to practice medicine in that state.

In an endeavor to bring order out of chaos, this Board recently established and published a list of foreign universities including a medical school which will be "recognized" by the Board to the extent that their graduates may apply for licensure in New York State. A second, complimentary list has been published setting forth the names of those universities whose medical graduates will not be admitted to the New York medical licensing examinations. This ruling becomes effective January 1, 1933.

No doubt this action will have a most desirable effect in curtailing the exodus of American students to foreign medical schools for no other purpose than to secure an M. D. degree because of inability to graduate from an American medical school, and, also, in promoting a better understanding between the edu-

national authorities of this country and those of foreign countries. The evaluation by this Association of credentials of American students applying for admission to the medical schools of Great Britain has done much to reduce the number of applicants (about 85 per cent). A similar plan might well be adopted by other foreign countries; in fact, it is under consideration by France and Switzerland. This work, together with the step taken by the New York Board of Medical Examiners will, no doubt, clarify the situation to a degree that will be satisfactory and acceptable to all concerned.

A copy of the New York Board list may be obtained by writing to the Board of Medical Examiners of the State of New York, Education Department, Albany, New York.

Certification of Specialists

The Medical Society of New Jersey has prepared an outline of a plan looking to the certification of specialists. The plan is as follows:

A special committee of the society shall be appointed to be known as the Committee on Credentials of Specialists to be composed of the president and secretary, the chairman of the Welfare Committee, chairman of the Board of Trustees, the secretary of the State Board of Medical Examiners and the first vice-president. Each component county medical society shall set up a similar committee composed of five members and to include the president and secretary of the society.

The state society will furnish a blank which the candidate for special licensure must submit to the county society committee. If this committee approves the

application, it will be sent to the state committee for final judgment. The certification is to be awarded at the annual meeting of the state society. The fee is \$25.

The following conditions will be considered favorable recommendations in judging an applicant's qualifications for certification:

1. General reputation as an honest, conscientious and ethical physician.
2. Membership in national societies, such as the American College of Surgeons, or a diploma from a national examining board, such as that in ophthalmology.
3. An experience of at least five years in the practice of the specialty in a hospital.
4. Postgraduate courses in recognized medical schools.
5. Evidence of continuous, active, successive practice during at least ten years, marked by study, travel, active membership in medical societies, and proof of special ability in their chosen fields of practice will be deemed worthy of consideration.

Committees for 1932-1933

The Executive Council of the Association has appointed the following committees for the current year: Committee on Educational Policies: E. S. Ryerson, chairman, Toronto, Canada; Alan M. Chesney, Baltimore; John Wyckoff, New York City; William Pepper, Philadelphia; Harold Rypins, Albany, N. Y.

Committee on Aptitude Test: Torald Sollmann, chairman, Cleveland; F. A. Moss, secretary, Washington, D. C.; Edw. A. Koch, Buffalo, N. Y.; Beverly Douglas, Nashville, Tenn.; J. Parsons Schaeffer, Philadelphia.

College News

Louisiana State University Medical Center

A department of pharmacology and experimental therapeutics has been created. Dr. Clyde Brooks, professor of physiology at the center, has been appointed to head the new department, in which he will carry on investigative work in conjunction with his duties as professor of pharmacology.

Richard Ashman, Ph. D., professor of physiology, will succeed Dr. Brooks as head of the department of physiology. Dr. Ashman was formerly assistant professor of physiology at Tulane University and Vanderbilt University.

Johns Hopkins University

Henry E. Sigerist has arrived at Johns Hopkins University to assume his duties as director of the Institute of History of Medicine, succeeding Dr. William H. Welch. Dr. Sigerist, since 1925, has been head of the Leipzig Institute of the History of Medicine, Leipzig, Germany. Dr. Oswin Temkin, who had been first assistant to Dr. Sigerist at Leipzig, has been appointed associate in the history of medicine at Johns Hopkins. Dr. Sigerist, in addition to his other work, will give a course in the history of science for undergraduates. Dr. John Rathbone Oliver will also give an introductory course in medical history.

The Henry M. Hurd Memorial Building, the Osler Medical Clinic and the Halsted Surgical Clinic, representing an outlay of nearly \$2,000,000 in addition to an endowment of more than \$3,000,000 from an anonymous donor, were dedicated at Johns Hopkins Hospital recently. Dr. John M. T. Finney, professor of clinical surgery, gave the Halsted Surgical

Clinic dedicatory address and Dr. William S. Thayer, professor emeritus of medicine, that for the medical clinic. The building, named in honor of the late Dr. Hurd, first superintendent of the hospital, was made possible by a gift from the late George K. McGaw, a trustee, accompanied by a \$35,000 endowment fund. The building, housing the two clinics, was completed at Johns Hopkins Hospital last year at a cost of \$1,740,000, of which \$500,000 was provided by the General Education Board. The clinics are memorials to the late Dr. William S. Halsted, first professor of surgery, and the late Sir William Osler, first professor of medicine, at the Johns Hopkins University School of Medicine.

University of California Medical School

LeRoy Crummer, professor of medical history and bibliography, has made a valuable addition of a number of rare old medical books, including one incunabulum and a number of old prints relating to medical history to the Crummer Collection of Medical History of the University of California Medical School Library. These gifts have been made jointly to the Medical School Library and the California State Medical Library.

Dr. Lewis J. Pollock, professor of neurology, Northwestern University Medical School, held a clinical demonstration on November 2, 1932. This was attended by members of the faculty and students.

Professor J. B. S. Haldane, head of the genetical department, John Innes Horticultural Institution, London, and Fullerian professor of physiology in the Royal Institution, spoke to the faculty and students on November 16, 1932.

Dr. Charles Singer, lecturer in the History of Medicine, University of London, and professor of the History of Science, University of California (to December 31, 1932) addressed the faculty and students on November 29, 1932. His subject was "Medicine and the Galilean Revolution."

Three new department chairmen were appointed: Dr. Ian M. Thompson, replacing Dr. Herbert M. Evans in the department of anatomy; Col. Cosam J. Bartlett, succeeding Col. William A. Powell in medicomilitary science and tactics, and Alexander M. Kidd, LL. B., in legal medicine. Dr. Dudley W. Bennett was appointed director of student health service at the university, and Dr. Sanford V. Larkey, librarian.

University of Rochester

It has been reported that the University of Rochester will receive about \$20,000,000 from the George Eastman estate; the Rochester Dental Dispensary will receive \$1,000,000 and \$3,000,000 will be distributed for unpaid gifts to European dental dispensaries. Only about \$500,000 of Mr. Eastman's estate of \$25,000,000 was taxable owing to his bequests to educational and charitable institutions.

School of Medicine, Division of Biological Sciences, University of Chicago

Fred L. Adair, professor of obstetrics and gynecology, has been appointed chairman of the department to succeed Dr. Joseph B. DeLee, whose appointment expired October 1. Dr. DeLee, who has been chairman since the founding of the department three years ago, has been appointed chief of the obstetric service in Lying-In Hospital. He will retain his professorship of obstetrics and gynecology.

New York University

The buildings and equipment formerly used by Cornell University Medical College fronting Bellevue Hospital, have been purchased with the prospect of developing in the future a large medical center in the Bellevue Hospital area. For the present the property will be utilized by University and Bellevue Hospital Medical College for laboratory and teaching space, but the undergraduate student body will not be enlarged. New York University now owns all the land necessary for its projected health center, including all the property between Twenty-fifth and Twenty-eighth streets on both sides of First Avenue.

University of Toronto Faculty of Medicine

Registration, session 1932-1933: First year, 169; second year, 155; third year, 145; fourth year, 117; fifth year, 115; sixth year, 126. Diploma in Public Health, 10. Bachelor of Science (medicine), 2; occasionals, 4; postgraduate, 4; total, 847.

The George Armstrong Peters Prize has been awarded to Dr. William Strathern Keith, a graduate of 1927, for his work on transplantation of bone. This prize may be awarded biennially to a graduate of the University of Toronto of not more than ten years' standing, who in the opinion of the Committee on Fellowships and Scholarships, has made a sufficiently important contribution to surgical science. The prize will consist of \$100 in cash and approximately \$100 in sterling silver, suitably engraved.

The Baptie Scholarship has been awarded to K. J. R. Wightman. It is awarded annually to a student of the second year in the Faculty of Medicine on the record of his work in the first year, consideration being given to his financial needs. The value of the schol-

arship is \$100 together with remission of fees to the amount of \$75 for one session.

Dr. J. G. FitzGerald, Dean of the Faculty of Medicine, who is a member of the Health Committee of the League of Nations, attended the meeting of this committee in Geneva in October.

Dr. Arthur W. Ham, a graduate in medicine of the University of Toronto of 1926, has been appointed assistant professor of anatomy. He served one year as an interne after graduation and one year in the Department of Pathology, University of Toronto. In 1929 and 1930 he held the appointment of instructor in cytology at Washington University, St. Louis. For four months in 1930 he was in Kenya Colony, East Africa, working on "The Life Cycle of the Parasite of East Coast Fever and the transmitting Tick." In 1931-1932 he was senior instructor in pathology at St. Louis University, St. Louis.

Dr. R. T. Noble, Dr. M. H. V. Cameron, Dr. W. J. McCollum, Dr. C. D. Parfitt and Dr. T. A. Middlebro, were elected as the representatives of the graduates in Medicine on the Senate of the University for the next four years, as a result of the recent Senate election.

University and Bellevue Hospital Medical College

At the meeting of the Council of New York University, held October 24, 1932, Dr. Samuel A. Brown, former Dean of the University and Bellevue Hospital Medical College, was given the honorary title of Dean Emeritus. Dr. Austin Flint's resignation as professor of obstetrics was accepted and he was given the honorary title of professor emeritus of obstetrics.

New appointments and changes in titles for the session 1932-1933: Richard T. Atkins, professor of otorhinolaryngology; Warren Coleman, professor of clinical medicine; Wesley C. Bowers, clinical pro-

fessor of otorhinolaryngology; Edwin W. Holladay, clinical professor of obstetrics and gynecology; Charles J. Imperatori, clinical professor of otorhinolaryngology; William Studdiford, associate professor of obstetrics and gynecology (effective as of Jan. 1, 1933); Dugald E. S. Brown, assistant professor of physiology; Clarence de la Chapelle, assistant professor of medicine; William Goldring, assistant professor of clinical medicine; Julius Klosterman, assistant professor of bacteriology and immunology; Elaine P. Ralli, assistant professor of medicine; Henry T. Burns, assistant clinical professor of obstetrics and gynecology; Claude E. Heaton, assistant clinical professor of obstetrics and gynecology; Evan McLave, assistant clinical professor of medicine.

September 20, 1932, New York University took title to the property in the Bellevue Hospital area previously belonging to Cornell University Medical College. This property comprises three units: the main building on First Avenue, extending from 27th to 28th Streets, which will be used to house certain of the preclinical departments, library and administrative offices; and two smaller buildings on 26th Street between First Avenue and the East River, which will afford laboratory space for the clinical departments. These additional 31,681 square feet bring the total ground area owned by New York University surrounding Bellevue Hospital to 120,036 square feet.

No extensive building is planned for the immediate future but alterations are under way to allow removal of certain departments to the newly acquired buildings and thus increase by at least 100 per cent the space available for all. It is not the purpose to increase the undergraduate student body, but to give more adequate facilities for a student body of about its present size.

These additions will also make possible the expansion of library facilities and will allow proper recreation rooms and reading rooms for students.

Loyola University School of Medicine

A new automatic sodium burner, invented by Dr. William C. Austin and Fred L. Humoller of the department of chemistry, is being marketed by the E. H. Sargent & Company. It has been hailed as a distinct improvement over the old type of burner which required feeding of the sodium salt by hand.

The burner is devised for use in polarimetry and can be used for production of monochromatic light of wave length corresponding to any metal obtainable in a non-hygroscopic salt. It was first demonstrated by Dr. Austin and Mr. Humoller at the twenty-sixth annual meeting of the Federation of American Societies for Experimental Biology, in Philadelphia, April 28, 1932.

Dr. Austin is professor and head of the department of chemistry in the medical school, while Mr. Humoller is a graduate fellow in the department.

University of Missouri

The first Sigma Xi lecture of the year was presented October 25 by Dr. Bradley M. Patten, associate professor of embryology and histology, Western Reserve University School of Medicine. His subject was "First Heart Beats and Beginning Circulation in Living Embryos." The lecture was illustrated with splendid micro-moving pictures of living chick and wren embryos and portrayed vividly the advantages of moving picture records of embryonic development. Dr. Patten's work has definitely established several new facts in the physiology of the circulatory system and the fetal membranes.

Dr. William L. Smith, Evansville, Ind., has been appointed roentgenologist to the

University Hospitals at the University of Missouri, Columbia. Dr. William J. Stewart, Jr., has assumed charge of the Crippled Children's Service at the University Hospitals, succeeding Dr. G. Kenneth Coonse, who has accepted a position in orthopedic surgery at Harvard University School of Medicine. Charles W. Greene, Ph.D., professor of physiology and pharmacology, has been granted a sabbatical leave for the second semester of this year.

University of Illinois College of Medicine

Dr. Frank R. Lillie, professor of embryology, University of Chicago, delivered the Charles Sumner Bacon Lectures December 7. His general subject was "Problems in the Biology of Sex." The title for the first lecture was "Biology of the Ovary in Birds"; the title of the second lecture was "The Effects of the Female Sex Hormone in Birds and the Nature of Sex Characters."

College of Medical Evangelists

The fifth series of the Colver Lectures for the medical profession was delivered by Dr. Russell M. Wilder of the Mayo Clinic on November 15, 16 and 17, at the White Memorial Hospital, in the Paulson Hall. The titles of the lectures were as follows:

1. The Diagnosis of Parathyroid Over-function.
2. The Treatment of Obesity. (This lecture was sponsored by the Section of Internal Medicine of the Los Angeles County Medical Association.)
3. Spontaneous Hypoglycemia.

University of Cincinnati

The Board of Directors of the University announces the election of Raymond Walters as president to succeed Herman Schneider who resigned to resume his duties as dean of the College of Engineering.

University of Louisville School of Medicine

Faculty changes: Dr. George M. Lawson, M. D., Yale University, who was on leave of absence to carry on research at the School of Public Health at Harvard, has returned to become the full time head of the newly created Department of Public Health and Bacteriology. Doctor Lawson will also be director of the Epidemiological Department of the City health service.

Dr. S. Spafford Ackerly, M. D., Yale University, has been appointed full time associate professor of psychiatry, in charge of the Psychiatric Service of the Louisville City Hospital, and director of the psychological clinic, which is now under direct control of the medical school.

Dr. R. A. Griswold, M. D., University of Louisville, who has recently been resident in surgery at the Lakeside Hospital in Cleveland, has returned as full time associate professor of surgery.

During the past year the Department of Surgery was reorganized, and Dr. C. E. Bird, M. D., Harvard, was appointed full time head, and Director of the Surgical Service in the Louisville City Hospital.

Dr. William F. Hamilton has been granted a leave of absence, and Dr. George E. Wakerlin, M. D., University of Chicago, has been appointed acting head of the Department of Physiology and Pharmacology.

Dr. Hampton Lawson, Ph. D., University of Chicago, has been appointed full time Assistant Professor in the Department of Physiology and Pharmacology.

In the Department of Anatomy, Dr. Edmund K. Hall, Ph. D., Yale University, D. Sc., University of Brussels, who has been engaged in research work in Europe during the past three years, has been appointed instructor on full time.

University of Alabama School of Medicine

Dr. William Walter Cort, professor of helminthology and head of the department, School of Hygiene and Public Health, Johns Hopkins University, delivered the annual address of the Alpha Alpha chapter of Alpha Epsilon Delta, University of Alabama, November 16, 1932. His subject was "The Hookworm Problem in the United States." Following the lecture, honorary membership in Alpha Epsilon Delta was conferred upon Dr. Cort.

Dr. Ernest C. Faust, professor of parasitology, Department of Tropical Medicine, Tulane University, New Orleans, La., delivered an address under the auspices of the Sigma Xi Club, University of Alabama, November 18, 1932. His subject was "Use of the Experimental Method in the Study of Human Parasitic Infections."

University of Virginia Department of Medicine

The university opened for the current session September 15. The total enrollment in the Department of Medicine is 247 students.

September 28, Dr. Russell Haden, of the Cleveland Clinic, spoke before the University of Virginia Medical Society on "The Problem of Chronic Arthritis."

Dr. Robert V. Funsten, assistant professor of orthopedic surgery at the University of Iowa from 1919 to 1922, and for the past ten years associate orthopedic surgeon at the Harper Hospital and the Children's Hospital of Detroit, Michigan, has been appointed professor of orthopedic surgery in succession to Dr. Allen F. Voshell and assumed his duties on July 1.

Dr. Lawrence T. Royster conducted an Institute of Pediatrics at the Community Center in Farmville on October 28. Dr. E. P. Lehman was elected chairman of

the Section of Surgery of the Southern Medical Association during the recent meeting in Birmingham, Alabama. The meeting of the University of Virginia Medical Society on November 21 was addressed by Dr. W. Ambrose McGee of Richmond, on the subject of "The Schilling Hemogram."

Duke University School of Medicine

Clinics have been given recently at the Duke Hospital by Dr. A. B. Moore, radiologist from Washington, D. C.; subject, "Gastro-Intestinal Diagnoses." Dr. Robert B. Osgood, professor emeritus of orthopedic surgery, Harvard School of Medicine, on "Arthritis." Dr. Norman T. Kirk, chief of the orthopedic section, Walter Reed General Hospital, Washington, D. C., on "Amputation." Dr. Carl Ten Broeck, director of the Division of Plant and Animal Pathology, The Rockefeller Institute for Medical Research, Princeton, N. J., on "Symbiosis Between a Virus and a Bacillus in Influenza in Hogs."

The North Carolina Pediatric Society held a meeting at the Duke Hospital and, at the clinics given, cases were presented by several members of the society and members of the pediatric staff of the hospital.

Western Reserve University School of Medicine

Dr. James Angus Doull, professor of hygiene and public health, addressed the thirteenth annual conference of Ohio Health Commissioners at Columbus, November 18, on "The Rôle of the Physician in Public Health Procedures."

Dr. Howard T. Karaner, professor and director of the Institute of Pathology of Western Reserve University, Cleveland, has been elected the United States member of the Comité Directeur of the Interna-

tional Society for Geographic Pathology. The other members are Professors Askanazy, Switzerland; Aschoff, Germany; de Josselin de Jong, Holland; and Roussy, France.

The Board of Trustees of the University Hospitals of Cleveland elected, confirming previous similar action by the Trustees of Western Reserve University, Doctor Carl H. Lenhart, professor of surgery and head of the department of surgery of the University Hospitals and at the Outpatient Department of Western Reserve University and the University Hospitals, upon recommendation of the faculty of the School of Medicine, to succeed Dr. Elliott C. Cutler, who resigned from this position in September to become professor of surgery at Harvard University. Dr. Lenhart's appointments are on a part-time basis and will enable him to continue his private practice of surgery in Lakeside Hospital.

Dr. Willy Baensch, professor of radiology and director of the X-Ray and Radium Institute, University of Leipzig, delivered the thirty-first Hanna Lecture October 10, on "Radiological Relief of the Gastric Mucosa."

George Washington University School of Medicine

The faculty recently inaugurated a program of monthly seminars and noon luncheons to be held on the first Wednesday of each month throughout the academic year. The speakers at these seminars present original investigations, and time is allowed for a general discussion. Nearly a hundred members of the faculty attended the first seminar, at which Dr. Earl B. McKinley, dean of the medical school, gave a paper on "A Concept of Susceptibility and Resistance to Infectious Diseases on a Physiological Basis." Dr. William A. White gave the address at the second seminar in November.

Cornell University Medical College

The Psychiatric Clinic of New York Hospital and this college was opened in October, at the new plant at York Avenue and Sixty-eighth Street. The psychiatric teaching curriculum has been greatly extended with the opening of the new clinic, which has accommodations for eighty-seven adult patients and twenty-three children. The department also conducts Bloomingdale Hospital, White Plains.

Wake Forest College School of Medicine

Construction of the new Johnson Medical Building, a donation of the family of the late Dr. Johnson, professor of anatomy in this school, is announced. The building will be in old Colonial style—two stories and basement.

On the first floor will be the medical library, lyceum room, laboratory for use by classes in pathology, bacteriology, histology and embryology together with class room, and technical laboratories and offices for the above faculty.

The second floor will provide laboratories for physiology, pharmacology, biochemistry and anatomy, with the class rooms, faculty offices and storage rooms arranged en suite.

The basement will be partially excavated and utilized for storage purposes incident to the needs of the school.

University of Colorado School of Medicine

Faculty promotions: Richard W. Whitehead, acting head of the department of physiology and pharmacology, succeeding Maurice H. Rees, dean of the school of medicine, who asked to be relieved of the departmental position; Edward Delehanty, professor of neurology and head of the department, succeeding the late

Dr. George A. Moleen; George Stephen Johnson, associate professor of psychiatry; Charles Albert Rymer, assistant professor of psychiatry.

Robert B. McKeown has been named clinical psychologist of the Colorado Psychopathic Hospital. The resignation of Dr. William C. Finnoff as associate professor of ophthalmology has been accepted.

Medical College of Virginia

Dr. Edward H. Cary, president of the American Medical Association, spoke to the student body of the Medical College of Virginia on a recent visit to Richmond. He was one of the principal speakers in the dedication of the new home and library of the Richmond Academy of Medicine.

Dr. Ray Lyman Wilbur, Secretary of the Interior, was the Founders' Day speaker on December 1. This was also the occasion for formally opening to the public the new library of the college.

University of Nebraska College of Medicine

A research fund of \$1,500 has been received from the Merrill Company of Cincinnati for work on allergy under the supervision of the departments of internal medicine and bacteriology.

Creighton University School of Medicine

The Rev. John J. McInerney, S. J., regent, will serve as acting dean of the school, assisted by Drs. Bryan M. Riley, professor of medicine, and Herbert F. Gerald, professor of pharmacology. Dr. Riley succeeds Dr. Schulte as chairman of the administrative board.

The appointment of Eugene F. Noonan and Leo P. Clements as assistant professors in the department of micro-anatomy and Zeno N. Korth as professor of pathology, is announced.

General News

Cook County Graduate School of Medicine

The Cook County Graduate School of Medicine in affiliation with the Cook County Hospital was incorporated under the laws of Illinois, September 3, as a corporation, not for pecuniary profit. The object is to maintain a graduate medical school for the advancement of medical, surgical and scientific studies and to engage in research.

The school will be located in a three-story fire proof building at 427 South Honore Street. It proposes to provide courses in general medicine, surgery and the specialties, to be of such duration and to include such subjects as will best serve to improve the knowledge and practice of regular graduates of recognized schools of medicine. No instruction will be given to persons who are not regularly licensed practitioners of medicine from recognized medical schools.

The initial aim of the school is to organize and systematize immediately the great facilities offered by the material contained in Cook County Hospital, and by the institution of a teaching unit in the hospital to improve the care of the sick. It is also desired that fellowships may be provided for the study of suitable problems. The faculty will include the staff of Cook County Hospital in all its branches. The administration of the school will be in the hands of a board of trustees.

Teaching of Ophthalmology

At the recent annual meeting of the American Academy of Ophthalmology and Otolaryngology held in Montreal, a special committee on undergraduate teaching of those specialties, after a study

conducted during the past year by means of questionnaires, made the following recommendations

1. Ophthalmology should be a compulsory subject in both didactic and clinical phases.
2. The undergraduate course in ophthalmology should embrace fifty actual hours as a minimum, which should be given during the junior and senior years, divided into fifteen didactic hours and thirty-five clinical hours, in which the student examines patients in the outpatient department.

It was further recommended that new instructors should be accepted in medical schools only after certification by the American Board of Ophthalmic Examinations or the American Board of Otolaryngology. The academy also organized a committee on extramural instruction to assist medical schools and societies to arrange courses of instruction. To this end the committee has developed a list of specialists who are available in giving local courses and will furnish lists of teachers on any desired subject, according to ability, geographic location and availability.

Training in Psychiatry

Plans for a course of training in community relationships for psychiatrists attached to state institutions have been announced by the mental hygiene committee of the State Charities Aid Association in cooperation with the state commissioner of mental hygiene and the heads of the various state hospitals. Psychiatrists in charge of the extramural work of the hospitals are to come to New York in turn for eight weeks' observation of mental hygiene problems and re-

sources as they occur in the community outside the institution. They will observe the work of outpatient clinics, the Institute for Child Guidance, juvenile courts and similar activities.

Survey of Psychiatric Teaching

Dr. Franklin G. Ebaugh returned to his position as director of the Colorado Psychopathic Hospital in Denver, after a year's leave of absence to make a survey of psychiatric teaching in medical schools. The work was a part of the activities of the division of psychiatric education of the National Committee for Mental Hygiene, created in 1931. Dr. Ebaugh has been director of the hospital and professor of psychiatry at the University of Colorado School of Medicine since 1924. Dr. George S. Johnson, acting director during Dr. Ebaugh's absence, continues as assistant director.

Overcrowding of Profession in Germany

The Deutscher Aerztevereinsbund, acting jointly with the Verband der Aerzte Deutschlands, has sent copies of an urgent petition to the federal ministry of the interior, the Prussian ministry of public welfare and the administrative boards of the universities, calling attention to the rapid increase in the number of medical students and demanding that some form of restriction be imposed to check this dangerous trend.

It is emphasized that further delay will promote radicalism among young physicians dissatisfied with present conditions. The depression has not, the petition points out, led to more sober judgment in the choice of a vocation or profession. In the summer semester of 1931, 4,467 medical students were enrolled in the universities, but that number has now increased. In the opinion of the medical profession, the conditions in the lecture rooms of the universities defy description.

That is true particularly of Berlin, Bonn and Breslau, in the clinics of Düsseldorf, in Frankfort-on-Main, Greifswald and Halle, and likewise in Königsberg, Leipzig, Kiel and Münster. In many of these universities, lecture rooms are so overcrowded that camp chairs have to be used in the aisles, and sometimes students are seen sitting on the staircases as the best available point of vantage for hearing lectures.

The medical profession thinks it is not justified to wait for the effects of a reform in the distant future. Physicians urge that it is not endurable that unlimited numbers of students be admitted to medical schools when the authorities know that they cannot be given thorough training in return for their money expended. In the petition, they demand that no more students be admitted to lectures and courses than the facilities justify. The physicians point out that the present facilities are quite equal to the training of all the new physicians that are likely to be needed. It is emphatically emphasized that there is an urgent need that restrictive measures be adopted without delay. The menace to the medical profession, and particularly to the ethics of the profession, is greater than it may seem at present.—*BERLIN LETTER, J.A.M.A., Oct. 8, 1932.*

Rockefeller Foundation Endows Clinical Research

The Foundation has given \$240,000 to University College Hospital, London, as a fund for the permanent endowment of a post, the holder of which will devote his whole energies to the advancement of clinical research. The object is to bring into existence a body of workers, free from ordinary hospital routine and teaching, who would devote their whole time to the investigation of special clinical problems.

Mary Putnam Jacobi Fellowship

The Women's Medical Association of New York City offers the Mary Putnam Jacobi Fellowship, \$1,000, for one year, available for postgraduate work in the medical sciences.

The fellowship is open to any woman graduate of an approved medical school. Each candidate must be endorsed by the head of the department in which her previous work has been done.

Applications for 1933-1934 should be filed with the secretary of the committee by April 1, 1933, and must be accompanied by statements as to health, educational qualifications and proposed problem for investigation.

Two reports will be required, one at the end of six months and one for publication when the problem has been completed. Dr. Annie S. Daniels is chairman of the committee; Dr. Rose Cohen, 36 West 90th Street, New York, N. Y., is the secretary.

Newly Discovered Galen Manuscript

At a meeting of the Prussian Academy of Sciences in Berlin, a report was presented by Dr. Richard Walzer of Berlin on a recently discovered manuscript by Galen. The manuscript, which is entitled "On Medical Empiricism," furnishes a complete Arabian translation by Hubais of the work that is known in the Occident only through a few scanty fragments. "On Medical Empiricism" is by no means a polemic against empirical medicine but rather a manual in which the eminent Greco-Roman physician, for didactic reasons, permits the advocates of unsupported theories to present their views, the mode of presentation being that first the dogmatizing physician attacks the empiricist and then the empiricist is given ample opportunity to defend his position. The manuscript contains

some new material on the history of philosophy; especially on skepticism, and a new fragment of the writings of Democritus and of the Cynic philosopher Diogenes. Likewise the antecedents of Hellenistic empirical medicine will be clarified by Walzer's discovery.

Lectures on Charlatanism

The medical faculty of the University of Berlin has organized a series of lectures on charlatanism. Professor Diepgen spoke on charlatanism in relation to scientific medicine in past centuries, Dr. Friedheim on German quacks of the present day, Professor Wiethold on the diagnostic methods of quacks, Dr. Kurzrock on the therapeutic methods of quacks, and Professor Müller-Hess on the legal and administrative measures available for combating quackery. An exhibit on the problem of charlatanism was opened in the institute for the history of medicine and the natural sciences, Universitätsstrasse 3 b.

Grants Available for Research

The Committee on Scientific Research of the American Medical Association invites applications for grants of money to aid in research on problems bearing more or less directly on clinical medicine. Preference is given to requests for moderate amounts to meet specific needs. Application forms may be obtained from the committee at 535 North Dearborn Street, Chicago.

Scripps Metabolic Clinic Lecture

David P. Barr, professor of medicine, Washington University School of Medicine, will deliver the annual Scripps Metabolic Clinic lecture and clinics in La Jolla, January 5, 6 and 7. These clinics are given for the San Diego County Medical Society.

Graduate Course in Surgery in Poland

The University of Poznan, Poland, has recently given a three months' graduate course in surgery for foreigners under the direction of Prof. A. Jurasz in the university surgical clinics and will offer the same course in the fall of 1933. It includes theoretical lectures, radiologic demonstrations, surgical technic and practical work in the operating room. Candidates are required to present credentials attesting graduation from medical school and their qualifications. Information will be given by Professor Jurasz, University Surgical Clinics, Szpital P. P., Poznan, Poland.

Nobel Prize in Medicine

The Nobel Prize for medicine and physiology for 1932 was awarded to Sir Charles Sherrington of Oxford University, England, and Prof. Edgar Douglas Adrian of Cambridge University, England, for their joint discoveries on the functions of the neuron.

Obstetricians Require Certification of Specialists

At the recent annual meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, a resolution was adopted requiring that future candidates for fellowship in the society who profess to be specialists in obstetrics or gynecology, or both, shall be diplomates of the American Board of Obstetrics and Gynecology. Exceptions to this rule may be made only by the executive council in cases of candidates who are in its opinion preeminent in their field.

De Lamar Lectures in Hygiene

Reginald Ruggles Gates, since 1921 professor of botany, King's College, University of London, opened the 1932-1933 series of De Lamar lectures in hygiene at the School of Hygiene and Public Health of Johns Hopkins University, Baltimore, October 19-21, with three lectures on "The Principles of Heredity and Their Application to Human Society."

Personals

Ernest Sachs, professor of clinical neurologic surgery, Washington University School of Medicine, St. Louis, has been elected a member of the German Academy of Sciences at Halle.

Walter B. Cannon, George Higginson professor of physiology, Harvard University Medical School, will present the Beaumont Lectures of the Wayne County (Detroit) Medical Society, January 30-31. The subject tentatively selected is the relation of the autonomic system to the functions of the alimentary canal.

T. D. Beckwith, Ph. D., has been appointed associate professor of bacteriology at the University of California, Los Angeles.

Martin Frobisher, Jr., Sc.D., New York, has been appointed associate in epidemiology at Johns Hopkins School of Hygiene and Public Health.

Clare Rittershofer has been appointed a Fellow in the Children's Research Hospital Foundation of Cincinnati. The greater portion of his time will be spent in investigation but he will have clinical and teaching connections in the School of Medicine of the University of Cincinnati.

Howard C. Naffziger, professor of surgery in the University of California Medical School, delivered the "opening lecture" of the school of medicine of the University of Southern California.

William L. Russell, professor of psychiatry in Cornell University Medical College, has been appointed Thomas W. Salmon Memorial lecturer for 1933.

William deB. MacNider, Kenan research professor of pharmacology in the school of medicine of the University of North Carolina, was elected president of the American Society for Pharmacology and Experimental Therapeutics.

G. Canby Robinson, director of the New York Hospital and Cornell Medical College Association, was elected president of the Association of American Physicians.

James H. Means, Jackson professor of clinical medicine in the Harvard Medical School, was reelected secretary of the Association of American Physicians.

Walter S. Leathers, dean of the school of medicine of Vanderbilt University, returned from a three months' tour of medical centers in a number of European countries.

H. K. MacDonald of Halifax, N. S., has been appointed chief of the department of surgery of Dalhousie University Faculty of Medicine in succession to E. V. Hogan who resigned a few months ago. Dr. McDonald has been a member of the department since 1914.

C. N. Hugh Long, assistant professor of medical research in McGill University, has accepted the appointment of director of the George S. Cox Medical Research Institute at the University of Pennsylvania.

Dr. Henry S. Houghton, dean of the State University of Iowa College of Medicine since 1928, has been appointed associate dean of the Division of Biological Sciences, University of Chicago, and director of the University Clinics.

Herbert E. Chamberlain has been appointed associate professor of psychiatry in the department of pediatrics of the Division of Biological Sciences of the University of Chicago. Dr. Chamberlain was formerly director of the child guidance clinic of the board of education of Minneapolis.

Arno B. Luckhardt, professor of physiology in the school of medicine of the Division of Biological Sciences of the University of Chicago, was elected president of the American Physiological Society.

Harry H. Davis, of Cornell University, has been appointed instructor of physiology and pharmacology in the School of Medicine of the University of Arkansas.

William Ophuls, for many years dean of Stanford University School of Medicine, has resigned. H. G. Mehrtens has been appointed acting dean.

William B. Porter, professor of medicine in the Medical College of Virginia, has returned from a tour of European medical centers.

William D. Haggard, professor of surgery in Vanderbilt University School of Medicine, was recently elected president-elect of the American College of Surgeons.

James A. Kennedy, Ph.D., has been appointed director of the division of diagnostic laboratories at the University of Rochester School of Medicine and Dentistry.

Dr. Evarts A. Graham, Bixby professor of surgery, Washington University School of Medicine, delivered the fourth annual Arthur Dean Bevan Lecture of the Chicago Surgical Society December 9, in conjunction with the Institute of Medicine of Chicago. His subject was "Mediastinal Tumors and Their Treatment."

James C. Flipper, dean of the Department of Medicine of the University of Virginia, was recently elected president of the Medical Society of Virginia.

Frank H. Krusen, associate dean in Temple University School of Medicine, was recently elected vice-president of the American Academy of Physical Therapy.

Dr. Franklin C. McLean, formerly director of the University Clinics in the University of Chicago, will become professor of physiology in the university as he wishes to return to scientific research.

Dr. George F. Dick has been appointed chairman of the department of medicine in the Division of Biological Sciences, University of Chicago. He has been holding a similar position.

Alonzo DeG. Smith has been appointed associate professor of medicine in charge of pediatrics at Howard University School of Medicine, Washington, D. C.

Dr. James Morley Hitzrot has been appointed professor of surgery and attending surgeon at the New York Poly-clinic Medical School and Hospital.

Abstracts of Current Literature

Certification of Obstetric and Gynecologic Specialists

Dr. Fred L. Adair summarizes his paper published in the Federation Bulletin, November, 1932, as follows:

1. The tendency to specialization is inherent in our social organization.
2. The specialization tends toward continually narrowing fields.
3. The rewards accruing from specialization tend to encourage many to enter these limited fields without adequate preparation.
4. This works to the detriment of those who have conscientiously prepared themselves and to the public who have no means of discriminating between those who are well prepared and those who are not.
5. Some means of certification is necessary and is being developed so that lay and professional groups can have some criterion for judging whether or not a man has fulfilled certain minimum requirements set up by an impartial and judicial board of examiners.
6. This should tend to limit the field of specialization to those who fulfill certain minimum qualifications.
7. This might tend to keep some who are not qualified for specialization in the ranks of general practitioners, which would be desirable from both professional and lay points of view.
8. It is hoped that hospitals and other institutions and organizations requiring the services of specialists will take cognizance of the certificates granted by these impartial and existing boards of examiners in making their appointments.
9. The laity who are seeking the services of specialists may thus have some tangible evidence that the specialist has been especially prepared for his work.
10. Young physicians who desire to specialize in obstetrics and gynecology will have

placed before them some rather definite ideas as to what constitutes the minimum desirable training and will be stimulated to secure it. It is hoped that it may be possible to direct ambitious men to places where such education and training may be obtained.

11. It will be gradually borne in upon educators that there is a lack of proper facilities for serious graduate education of specialists and that the demand must be met in our own country.

12. The medical profession should improve this opportunity to perfect itself and protect the laity by recognition of specialists who are properly prepared for their work and the elimination of those who are not so prepared for specialization. The laity should not be given the opportunity to lead in this recognition and certification or licensure of specialists in the various branches of medicine and surgery.

Licensure of Specialists

Dr. J. Bentley Squier, president of the American College of Surgeons, dealt at great length with this topic in his presidential address. He said, in part:

A recent graduate, unless he plans to spend several years in general practice, should be required to spend two years as an intern on the medical service of a hospital before he takes up any specialty, in order to acquire a background of knowledge of the human being as a whole. If he then elects to pursue general surgery, he should spend two more years on the general surgical wards and at least one year in a surgical fellowship before he is allowed to practice. If some surgical specialty appeals to him, this latter requirement should be changed to one year in general surgery and two

in the specialty chosen. After such a course of training the institution giving it could furnish the doctor a certificate which would be a reasonable guarantee of proficiency.

Five years spent in hospital training may seem too long, to many. If so, some

time might be deducted from the year spent in academic, premedical studies, and thus give the medical student a chance to assume responsibilities earlier in his scholastic career. Readjustments in our system of medical education, in the near future, are inevitable.—*Clinical Medicine*, Dec., 1932.

Deaths

Theodore Tieken, Ingals clinical professor of medicine in Rush Medical College (University of Chicago), died of coronary thrombosis, aged 66.

Thomas G. Lee, for many years professor of anatomy in the Medical School of the University of Minnesota, died of injuries received in an automobile accident, aged 71.

Ephraim D. Klots, associate professor of medicine in the New York Homeopathic Medical College, died of a gastric hemorrhage, aged 62.

James C. Lumpkin, formerly professor of clinical surgery in the University of Maryland School of Medicine, died of heart disease, aged 62.

Astley P. C. Ashurst, professor of clinical surgery in the School of Medicine of the University of Pennsylvania, and the Graduate School of Medicine, died, aged 56.

Harry T. Hillstrom, assistant professor of surgery in charge of radiology in Vanderbilt University School of Medicine, died, aged 29, of injuries received in an automobile accident.

Edward W. Taylor, James Jackson Putnam emeritus professor in Harvard Medical School, died, aged 66.

William B. Kern, professor of clinical medicine (psychiatry) in the College of Medical Evangelists, died, aged 70, of pernicious anemia.

Orville R. Chadwell, professor of pediatrics in Boston University School of Medicine, died, aged 55, of acute morphine poisoning.

Lewis Fisher, associate professor of neuro-otology in the Graduate School of Medicine of the University of Pennsylvania, died, aged 46, of injuries received in an automobile accident.

E. Bates Block, professor of neurology and psychiatry in Emory University School of Medicine, died, aged 58.

Alfred L. Gray, professor of roentgenology and former dean of the Medical College of Virginia, died, aged 59, of osteogenic sarcoma of the pelvic bone.

Gordon Wilson, professor of medicine in the University of Maryland School of Medicine, died, aged 55, of heart disease.

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